



Wellhead Protection Plan TOWN OF MIDDLEBURG

Revised March 2013

Prepared by Tetra Tech, Inc.
In Cooperation with the Middleburg Wellhead Protection Advisory Committee and the Virginia Department of Health



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WELLHEAD PROTECTION PLAN

TOWN OF MIDDLEBURG
PWSID: 6107450
LOUDOUN COUNTY

Revised March 2013
Adopted by Town Council May 23, 2013

Plan Preparation Funded by the Virginia Department of Health
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In cooperation with the:
Middleburg Wellhead Protection Advisory Committee

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Table of Acronyms

GPM	– Gallons Per Minute
IPM	– Integrated Pest Management System
MCL	– Maximum Contamination List
NRCS	– Natural Resources Conservation Service
PCS	– Potential Sources of Contamination
ROW	– Right-of-Way
SDWA	– Safe Water Drinking Act
SWAP	– Source Water Assessment and Protection
SWPA	– Source Water Protection Area
USEPA	– United state Environmental Protection Agency
UST	– Underground Storage Tank
VDEQ	– Virginia Department of Environmental Quality
VDH	– Virginia Department of Health
VPDES	– Virginia Pollutant Discharge Elimination System
WARN	– Water/Wastewater Agency Response Network
WHPA	– Wellhead Protection Area
WHPP	– Wellhead Protection Program
WPAC	– Wellhead Protection Advisory Committee

Wellhead Protection Plan Town of Middleburg

Purpose

The intent of this document is to describe what the Town of Middleburg has done, is currently doing, and plans to do to protect its source of drinking water. Although the Town of Middleburg treats the water to meet federal and state drinking water standards, conventional treatment does not fully eradicate all potential contaminants, and treatment that goes beyond conventional methods is often very expensive. By completing this plan, the Town of Middleburg acknowledges that implementing measures to prevent contamination can be a relatively economical way to help ensure the safety of the drinking water.

It should be noted that proposed source water protection strategies in this report are voluntary, and not necessarily mandated by the Safe Drinking Water Act (SDWA). Proposed action items and schedules are subject to change.

What are the Benefits of a Wellhead Protection Plan?

- ✓ It can ensure conditions to provide the safest and highest quality drinking water to customers at the lowest possible cost.
- ✓ It establishes strategies to minimize the potential threats to the source of drinking water.
- ✓ It can plan for expansion, development, zoning and emergency response issues.
- ✓ It can document the need and purpose for funding to improve infrastructure, purchase land in the protection area, and make other improvements to the wellhead or source water protection areas.

Background

Source Water Protection

Since 1974, the federal Safe Drinking Water Act (SDWA) has set minimum standards on the construction, operation, and quality of public water systems. In 1986, Congress amended the SDWA. A portion of those amendments were designed to protect the source water contribution areas around groundwater supply wells. This program eventually became known as the Wellhead Protection Program (WHPP). The purpose of the WHPP was to prevent pollution of the source water aquifer supplying the wells.

The Safe Drinking Water Act Amendments of 1996 expanded the concept of wellhead protection to include surface water sources under the umbrella term of Source Water Protection. The amendments encourage states to establish source water assessment and protection (SWAP) programs to protect all public drinking water supplies. As part of this

initiative, states must explain how protection areas for each public water system will be delineated, inventoried for potential contaminant sources, and given a susceptibility rating. In 2005, the Virginia Department of Environmental Quality published the Wellhead Protection Plan for the Commonwealth of Virginia, which was endorsed by the United States Environmental Protection Agency (USEPA). Source Water Protection Plans prepared for public water systems in Virginia should include all elements described in the approved Wellhead Protection Plan.

As a result of the SDWA amendments and the development of the Commonwealth's Wellhead Protection Plan, the Virginia Department of Health (VDH) began preparing assessments for public drinking water facilities. During these assessments, field office personnel would identify the sources of water (e.g., wells, springs, reservoirs), provide delineations, and inventory potential sources of contamination to gather information used to score each water source's susceptibility. Each public water system was provided a copy of its assessment. The Town of Middleburg was provided its Source Water Assessment, prepared in August 2002. The assessment was the first step in preparation of a Source Water Protection Program or Wellhead Protection Program in the Town of Middleburg. A copy of the assessment is provided in **Appendix A**.

In 2008 under a previous contract with the VDH, Oliver, Inc. prepared a Wellhead Protection Plan for the Town of Middleburg. Since that time, two new wells have been brought on-line. The following revision of the Wellhead Protection Plan for the Town of Middleburg will incorporate information provided by Oliver, Inc. and update site characterizations, source inventories, and protection strategy recommendations. A complete copy of the 2008 Wellhead Protection Plan is on file at the town office and posted on the town website: <http://www.townofmiddleburg.org/>.

Local Advisory Committee

Communities with successful protection plans most often form a Local Advisory Committee. Members help develop and implement Wellhead Protection Plans; provide a broader level of oversight; and should include individuals familiar with the water system, the community, specific contaminant sources, and/or protective strategies. Committee members may include: water supply staff, emergency response personnel, local decision makers, business and industry representatives, land owners (of land in the protection area), and concerned citizens. The Committee may consist of a few to many individuals depending upon the community and water supply. The Town of Middleburg has formed a Wellhead Protection Advisory Committee (WPAC) listed in **Table 1**. The committee has contributed to the preparation of this Wellhead Protection Plan and are resolved to make necessary recommendations to the Town Council to support its implementation.

The committee holds regular meetings and invites the public to attend. Meeting agendas and minutes are recorded and made available to the public upon request. The public is welcome to contribute to Wellhead Protection activities and may be asked to join the committee. Those seeking more information regarding committee meetings and activities should contact the town office at 540-687-5152.

Table 1: Protection Team Members

Name	Organization	Title
Lisa Patterson	Town of Middleburg	Committee Chair
Jlann Brunett	Town of Middleburg	Committee Vice Chair
Charlie Triplett	Loudoun Water	Operator
Mark Snyder	Town of Middleburg	Town Council Representative
Rhonda North	Town of Middleburg	Town Clerk
Dick Engberg	American Water Resources Association	Technical Director
Trevor Fosdick	Town of Middleburg Fire Department	Fire Chief

WHPA Characterization

Portions of the following Wellhead Protection Area (WHPA) Characterization are from the 2008 Wellhead Protection Plan, expanded to include the WHPA for the two new wellheads not represented previously.

System Information

The Town of Middleburg operates a community public water system, defined as a system that regularly supplies drinking water from its own sources to at least 15 service connections used by year-round residents of the area or regularly serves 25 or more people throughout the entire year. The Town of Middleburg serves an estimated population of 762 people. In addition to residents, the water system serves many businesses and will supply the Salamander Resort currently under construction. Resort developers worked closely with the Town of Middleburg to identify additional sources of water and constructed a second water treatment plant to increase capacity.

The land surrounding the Town of Middleburg wells is primarily residential with some farmland, commercial businesses, schools and a vineyard, as well as the Salamander Resort area and conservation easements.

Water Supply Wells

Originally, the Town of Middleburg treated surface water from the Little River at a treatment facility located outside of town in Fauquier County, but has since developed several wells to supply raw water. The first well developed is no longer in use, reportedly taken off line when dry cleaning fluids were detected from a neighboring dry cleaning business. Currently five wells are used. All wells have been designated as highly susceptible to contamination by the VDH because they are not constructed in confined or naturally protected aquifers and/or because there are other conduits (such as other drinking water wells) drilled into the aquifer(s) used as the town's water supply. The wells are:

- Well 1 is not currently in use due to contamination.

- Well 2 is located in Fauquier County. When initially drilled in 1971, this well yielded approximately 150 gpm. The well is equipped with a 76 gpm pump, and currently yields are approximately 50 gpm. The water is treated at an onsite water treatment plant.
- Well 3, drilled in 1986, is located within the town limits, with a yield of 104 gpm in a 48-hour pump test. This well has high levels of iron and manganese, so less water is pumped from the well than is possible. The water is treated onsite.
- Well 4, drilled in 1994, is located within the town limits. This well yielded 150 gpm during the initial pump test. Since that time, the water system operator has been instructed by VDH engineers to reduce the pump rate to 80 gpm to prevent drawdown of the aquifer and align with the treatment capacity of the nearby water treatment plant. The water treatment plant is equipped to remove contaminants such as iron, manganese, Gross Alpha, Gross Beta, and Combined 226/228 Radium in the source water. These contaminants are thought to be naturally occurring. Refer to the Town of Middleburg Annual Drinking Water Report for the most up to date treatment and monitoring data.
- Wells 5 and 6 (also referred to in records as Wells L and P) were originally developed on the Salamander Resort property to provide public drinking water to the resort. The Town of Middleburg has taken on the responsibility of maintaining and operating the wells and the second water treatment plant to supply water to the resort and to increase capacity for the entire water works. In addition, the town limits have been extended through a boundary line adjustment to include the property associated with the resort area and include the WHPA Zone 1 for each of the wells. The results from a 72-hour pump test in 2004 for Wells 5 and 6 were 59 gpm and 60 gpm, respectively. Both wells have submersible pumps with 50 gpm capacities. The water treatment plant serving Wells 5 and 6 is also equipped to remove radiological contaminants. The source water from Wells 5 and 6 is treated the same as the source water from Well 4.

Delineation

Delineation is the process used to identify and map the surface recharge area that supplies water to a well or spring or the drainage basin that supplies water to a surface water intake. This area is referred to as the source water protection area (SWPA), also referred to as a Wellhead Protection Area. The WHPA is defined as the surface or subsurface area surrounding a water well through which contaminants, if present, are reasonably likely to move toward and reach the water well. The WHPA is the area that will be managed by the Town of Middleburg in order to protect ground water resources.

The WHPA was delineated by VDH as part of the source water assessment based on a fixed radius around each of the wells supplying water to the Town of Middleburg. The VDH assessment considered two different zones:

- Zone 1 is a 1,000 foot radius around the well and is a priority zone for managing potential sources of contamination; and
- Zone 2 is a one-mile (5,280 feet) radius which represents an estimate of the total recharge zone for the well.

The fixed radius approach to delineate the recharge area is used as a reasonable approximation. More specific delineation of the recharge area can be developed through a more extensive evaluation of factors such as the hydrogeology in the vicinity of the well, daily withdrawal rate of the well, watershed boundaries, topography, bedrock and surficial geology, permeability and hydraulic conductivity of the bedrock, flow boundaries such as ridges, rivers, canals and lakes, fracture traces and lineaments, and dissolution features such as sinkholes. These evaluations may include ground water basin boundary determination, Tiered Zone boundary delineations, and/or ground water discharge modeling.

A map of the WHPA zones for the Town of Middleburg's Wells is displayed as **Figure B-1** in **Appendix B**.

Geology and Soils

The Town of Middleburg is located at the confluence of two geological provinces, the Piedmont Province of Virginia and Blue Ridge Province of Virginia, thus geological accounts vary slightly in the literature (DMME 2012, Cady 1938). The Blue Ridge province consists mainly of Proterozoic and Paleozoic igneous and metamorphic rock, with some occurrences of younger sedimentary rock and intrusions (Trapp and Horn 1997). Hard, crystalline igneous and metamorphic formations dominate the Piedmont Province region with some areas of sedimentary rocks and sapphire deposits overlying the bedrock. In general, groundwater is typically found in joints and fractures of igneous and metamorphic rocks (Trapp and Horn 1997) in the Town of Middleburg area.

The Town of Middleburg's public supply wells (2, 3, 4, 5 and 6) are located in Marshall metagranite (map units Ymb and Ymm). Marshall metagranite is generally considered a poor water bearer (Cady 1938). Well completion reports from the region indicate varying well depths (approximately 300 to 700 ft below the surface) and water yields (4-246 gpm). Higher yields are most likely related to the proximity to a fracture or fissure. Well completion reports also have one to three water bearing units recorded. Refer to **Appendix B** for additional information regarding the geologic provinces, specific geologic units in the WHPA, and a map of the geology in the WHPA (**Figure B-2**). Well completion reports are filed with the Loudoun and Fauquier County Health Departments.

Soils

A detailed soil survey of Loudoun and Fauquier Counties has been completed and mapped by the U.S.D.A Soil Conservation Service. Soils types can be important because the rate the groundwater infiltrates through the soil and type of plants that grow in the soil control the amount of precipitation that reaches the groundwater. The hydrologic soil group classification is provided for each of the main soil types in **Table 2**. **Table 2** also provides the total area in acres and % of the WHPA for each significant soil type (representing 2% or greater of the WHPA). The hydrologic soil group is a means for grouping soils by similar infiltration and runoff characteristics. Clay soils that are poorly drained tend to have the lowest infiltration rates, whereas sandy soils that are well-drained have the highest infiltration rates. Natural Resources Conservation Service (NRCS) has defined four hydrologic groups for soils, A-D (NRCS 2007). Group A soils are described as having high infiltration rates that are usually deep, well-drained sands or gravels and

typically have little runoff potential. Group B soils are described as having moderate infiltration rates that are usually moderately deep and moderately well-drained soils. Group C soils are described as having slow infiltration rates, and typically have finer textures with slow water movement. Group D soils are described as having very slow infiltration rates and high clay content with poor drainage. Group D soils usually have high runoff potential. The soils data were summarized using the major hydrologic group in the soil surface layers.

The majority of the soils in the WHPA are classified in Groups B and C. Refer to Figure B-3 in Appendix B to see a map of the hydrologic groups in the WHPA.

Table 2: Soils and hydrological groups in the Town of Middleburg WHPA.

Map Unit Symbol	Map Unit Name	Area in WHPA (ac)	% WHPA	Hydrologic Soil Group
10A	Mongle silt loam	152	2.8	D
10B	Mongle silt loam	176	3.3	D
17B	Middleburg loam	500	9.4	B
20C	Tankerville-Purcellville complex	355	6.7	C
20D	Tankerville-Purcellville complex	630	11.8	C
20E	Tankerville loam	147	2.8	D
22B	Purcellville-Swampoodle complex	149	2.8	B
23B	Purcellville silty clay loam	326	6.18	B
28C	Fauquier and Eubanks soils	108	2.08	C
30C	Edneytown-Chestnut complex	816	15.3	B
30D	Edneytown-Chestnut complex	231	4.3	C
31B	Purcellville-Tankerville complex	619	11.6	B
31C	Purcellville-Tankerville complex	273	5.1	C
38B	Swampoodle loam	122	2.3	C
Other	28 separate map units	733	13.73	various

Identification of Local Source Water Concerns

Potential Sources of Contamination Inventory

This inventory identifies potential sources of contamination (PSCs) in and around the protection area that could pose a threat to drinking water. A facility or activity is listed as a PSC if it has the potential to release a contaminant based on the kinds and amounts of chemicals typically associated with that type of facility or activity. It does not necessarily indicate that any release has occurred. An initial PSC list was developed as part of the Source Water Assessment conducted by VDH in the early 2000's. This list was reviewed prior to field investigation.

On September 18, 2012, in preparation for developing this protection plan, contractor staff met with the Town of Middleburg Wellhead Protection Advisory Committee to gain local knowledge of the presence of PSCs and determine local concerns. In conjunction with this meeting, water system operator, Charlie Triplett provided a tour of the WHPA and information specific to each well. He also provided local insight to PSCs not listed on the

original inventory and not easily detected (ex. underground storage tanks, abandoned water wells, spill sites, etc). PSCs were identified for the WHPA Zone 1 during the field investigation. The most significant threats are from conduits (private wells), septic systems, waste water pump stations, active and historic gas stations, a fertilizer supply store, and a vineyard. Refer to **Appendix C, Table C-1** for specific PSCs and **Figure C-1** for locations of the PSC as they relate to the WHPA.

In addition to the field investigation, contractor staff referred to regulated databases of PSCs, known sites of contaminant releases, and wells from federal, state, and county sources. Regulated PSCs were identified for WHPA Zones 1 and 2, where available. The Regulated PSCs have not necessarily been field verified and represent potential threats that should be further investigated. **Table 3** provides a list of Regulated PSC types, data sources, and number of occurrences within the WHPA. The most significant regulated sites include petroleum releases, individual wells, and individual septic systems. Specific site data for each Regulated PSC Types is provided in **Appendix C**, including figures showing locations and table providing specific parcel information.

Table 3: Regulated PSC Types and data sources in the Town of Middleburg WHPA.

Regulated PSC Type	Data Source	Total in WHPA
NPPDES (VPDES)	Virginia Environmental Geographic Information Systems (VEGIS) permits	4
Petroleum Release	VEGIS	29
Petroleum Facility	VEGIS	11
RCRA	US EPA	4
Wells (conduits)	Loudoun County GIS**	187
Subtype	WWCO Community well	15
	WWDH Dry well	5
	WWDU Dug well	4
	WWIN Individual well	150
	WWMN Monitor well	3
	WWNC Non-community well	1
	WWSP Spring	4
	WWTS Test well	5
Subtotal		
Pollutant Sources		189
Loudoun County GIS**		
PCEM Cemetery		6
PSCS Chemical storage tank		12
PSSD Sewage disposal system		167
PSTP Sewage treatment plant permits***		4
Subtotal		

Note: *The environmental data contained within the [VEGIS] files are intended for REFERENCE ONLY and are NOT certified to be absolutely complete or correct.

**Loudoun County GIS does not include the entire WHPA. Conduits known near Well 2 in Fauquier County were identified during the PSC field investigation and through data provided by the Fauquier County Health Department, displayed on Figure C-1.

***Two permits are issued to single family homes; two are issued to the Middleburg Wastewater Treatment Plant.

Prioritization of Potential Contaminant Sources & Critical Areas

It may not be feasible to develop management strategies for all of the PSCs within the Town of Middleburg SWPA, depending on the total number identified. The identified PSCs can be prioritized by potential threat to water quality, proximity to the intake or well, and local concern. The highest priority PSCs can be addressed first in the initial management plan. Lower ranked PSCs can be addressed in the future as time and resources allow. In addition to identifying and prioritizing PSCs within the WHPA, local source water concerns may also focus on critical areas. For purposes of this wellhead protection plan, a critical area is defined as an area, identified by local stakeholders, within or outside of the WHPA, that may contain one or more PSC(s), and/or within which immediate response would be necessary to address the incident and to protect the source water.

During a follow-up meeting on December 11, 2012, the Wellhead Protection Advisory Committee reviewed the PSC and critical area lists derived from the original Source Water Assessment Report and 2008 Wellhead Protection Plan, new field verified PSCs, regulated points, and local concerns. Meeting participants identified highest priority concerns at that time (**Table 4**). The Town of Middleburg protective strategies will focus on these PSCs and critical areas. Strategies are detailed in **Tables 5-6**. A complete summary of Action Items is provided in **Table 7**.

Table 4: PSCs and/or Critical Areas Prioritized as Highest Priority and Reason for Local Concern

Highest Priority PSCs/Critical Areas	Why Are They Considered Highest Priority?
Conduits	Because water wells, oil/gas extraction wells, septic systems, vertical geothermal wells, etc. can allow surface water and contaminants a direct route to ground water, these conduits must be properly constructed and maintained. Several conduits were identified in the Town of Middleburg WHPA. The condition of many conduits is not known entirely. In addition, the condition of existing domestic, irrigation, monitoring wells that are documented will not be inspected by the county health department regularly, if at all. Table C-3 in Appendix C provides specific parcel numbers for each conduit. Not only do improperly constructed and/or maintained conduits allow surface contaminants access to ground water, but uses such as septic systems can introduce contaminants.
Water use	In addition to private water wells acting as potential conduits for contamination, they may also represent a different threat to the Town of Middleburg public water works. If used, private water wells can draw contaminants into the public wells; and can draw groundwater resources from the public wells operated by the water works, reducing the wells capacity and the Town's ability to meet water demands. Currently, the Loudoun County Health Department has record of 13 wells on the Salamander Resort property, one of which is noted as "abandoned" on the report. Two of the wells (Wells L and P) are being operated by the Town of Middleburg water

Highest Priority PSCs/Critical Areas	Why Are They Considered Highest Priority?
	works. The remaining 10 wells include one domestic water well, one monitoring well, and eight public water wells.
Petroleum storage and spills	Several homes in the Middleburg area are using or have used oil burning heating systems. Oil is delivered to these homes and stored in or around the home. For homes that have converted to alternative heat sources, storage facilities may remain on their property. Petroleum releases during delivery or due to leaking storage facilities can contaminate the drinking water source if not addressed.
Gas Stations/ Maintenance Garages/Car Washes	Oils, antifreeze, and other automobile fluids can cause contamination of groundwater sources if not cleaned up and disposed of properly. USTs, particularly those at historic sites, may leak and contaminate groundwater sources.
Herbicides/insecticides/fertilizers	Herbicides, insecticides and fertilizers used for farm operations, including vineyards, can migrate into the water supply. Areas used for disposal of animal waste or burying dead livestock can also cause contamination of the source water. Southern States is located in the WHPA Zone 1 for Well 4. The business stores and sells fertilizer, herbicides and insecticides. If not stored properly or in cases of fire emergencies, these chemicals have been known to leach into the ground.
Municipal Area -Concentrated Residential/Municipal Facilities	Municipal areas have a concentration of homes, businesses, schools, and other facilities that may collectively introduce contaminants into surface water at a concentration to cause concern. Storm water runoff, care of public grounds, maintenance of city and county vehicles at garages, and residents' activities in and outside their homes can contribute to contamination of the surface water including: fertilizers, insecticides, herbicides, oils, paints, cleaning agents, etc.
Public and Private Waste Water	There are private individual septic systems and public waste water systems located in and near the WHPA. Accidental releases may allow untreated waste water to contaminate the water resource. Failing private septic systems can leach into surrounding soils and potentially contaminate the source water.
Highway Traffic and Rights-of- way Maintenance	Highways traverse the WHPA. A hardware/fertilizer store, millworks, vineyard, and residences with oil burning heating systems occur within the WHPA. Each of these may require truck traffic, hauling fertilizers, herbicides, insecticides, and petroleum products through the WHPA. The source water could become contaminated if an accident was to occur and a spill not addressed. Highway and utility rights of way are typically maintained with herbicides and insecticides that can migrate into the water supply.

Highest Priority PSCs/Critical Areas	Why Are They Considered Highest Priority?
Water Treatment Facilities	Water is treated at separate water treatment plants that are in close proximity to each well. The water treatment plants are considered potential threats to the sources due to the chemicals used to treat the water, as well as the concentration of contaminants removed during the treatment process.

Protective Strategies

Source Management Strategies- Action Plan

Source management strategies are any actions taken to protect the source water from specific PSCs, type of contaminant, or critical area. For example, prohibitions, design standards, operating standards, and reporting requirements are typical source management strategies. Land purchases, conservation easements, and purchase of development rights are also included in the category of source management strategies.

It is advisable to focus source management strategies on high-priority PSCs, especially those that are within the Town of Middleburg jurisdiction. However, the Town of Middleburg can protect against contaminant sources outside its jurisdiction by working with the officials of the county or neighboring communities in which the sources are located.

Table 5 lists the PSC/critical area and active or possible protective strategies that the Town of Middleburg has implemented, is implementing, or intends to implement to reduce the threat to the source water.

Table 5: Source Management Strategies

ID #	Highest Priority PSCs/Critical Areas	Action Items
5-1	Conduits	<p>The Town of Middleburg has enacted an ordinance that prohibits the construction of private water wells and the use of existing wells for drinking water when residents have access to the public water works. Private water wells may be used for non-potable activities, such as irrigation. Even so, many unused private water wells exist that should be properly abandoned. In order to accomplish this goal, the WPAC will recommend to the Town Council to promulgate a town ordinance requiring proper abandonment of existing wells on properties undergoing changes requiring a site plan approval. Site plan approval will be contingent on the applicant providing evidence that pre-existing wells have been or will be abandoned in accordance with specifications established by Loudoun County provided in Appendix D or accessed at: http://va-loudouncounty.civiciplus.com/index.aspx?nid=1451</p> <p>The Town of Middleburg will consider abandonment of Well 1 and any other known wells on town property or on properties</p>

ID #	Highest Priority PSCs/Critical Areas	Action Items
		<p>seeking abandonment assistance, prioritizing those wells closest to public drinking water wells. The Town of Middleburg will pursue a grant from VDEQ to abandon wells. More information concerning the grants can be accessed by visiting: http://www.deq.virginia.gov/Programs/Water/WaterSupply/WaterQuantity/GroundwaterProtection/SteeringCommittee/WellheadProtection.aspx or contacting program coordinator Mary Ann Massie at 804-698-4042.</p> <p>The Town of Middleburg will also consider seeking grant funding or a capital improvement project to provide for maintenance of physical security at wellheads and treatment facilities.</p>
5-2	Water Use	<p>With the limited groundwater resource in mind, the WPAC will investigate current non-potable uses and advise the Council regarding their findings. At the direction of Council, the WPAC will solicit participation in water use agreements. The committee will also study and recommend to the Council the steps the town can take to ensure the proper abandonment or maintenance of existing wells on the Salamander Resort property. According to well completion reports, filed by well drillers, Well R yielded 125 gpm and Well Q yielded 100 gpm, during the initial pump tests. The town should consider preserving at least one of these wells through agreements with the Salamander Resort and the VDH as a backup source, in the event that Wells 5 or 6 are taken out of service.</p>
5-3	Petroleum Storage and Releases	<p>The WPAC will identify home owners with heating oil storage facilities within the town limits, prioritizing those homes within the WHPA Zone 1, 1000' foot delineation. This information will be sought from the public and/or heating oil suppliers. At the direction of the Council, the committee will communicate the source water vulnerability to these residents and encourage the removal of unused tanks, particularly those installed underground. The committee will propose that the Town Council establish an ordinance requiring inspection reports for tanks in use or the removal of unused tanks on properties undergoing modifications requiring a site plan approval or rezoning by the Planning Commission.</p>
5-4	Gas Stations/ Maintenance Garages/Car Washes	<p>The WPAC will assist the Town in educating station owners about the need to properly dispose of oil and other automobile products and ask them to follow regulations and institute BMPs to contain and clean up spills. These facilities may already be implementing best management practices for monitoring and/or containing a potential leak or spill and may be reviewed.</p> <p>The committee in cooperation with the Town staff will determine</p>

ID #	Highest Priority PSCs/Critical Areas	Action Items
		if groundwater remediation is ongoing at the Exxon to monitor for contamination. If there is monitoring, the committee in cooperation with the Town staff will request monitoring results from the VDEQ in order to understand the depth of contamination and potential for migration of the contaminants into the source water.
5-5	Herbicides/insecticide s/fertilizers	<p>The WPAC will recommend the Council adopt a wellhead protection overlay district ordinance that limits the amount of any substance with a Maximum Contaminant Level in drinking water, including fertilizers, herbicides and insecticides that can be stored or applied in the WHPA Zone 1. Example language appears in Appendix D. If a local ordinance is not accepted, the committee will recommend increased raw water monitoring for specific contaminants, such as nitrates/nitrites.</p> <p>Work with the owner or operator of the resort, vineyard, and town/county facilities to recommend an Integrated Pest Management System (IPM) and ensure the use of BMPs when applying fertilizers. For more information on developing an IPM, visit: http://www.epa.gov/opp00001/factsheets/ipm.htm.</p>
5-6	Municipal Area - Concentrated Residential/Municipal Facilities	<p>The WPAC will recommend that the Town Council establish Wellhead Protection Overlay Districts, including WHPA Zone 1 that shall consist of a 1,000' buffer around the Town's wells, which shall be considered during zoning decisions. Several threatening land uses may be limited or restricted within the overlay districts (example language and possible land uses are provided in Appendix D). Any request to rezone land from residential to commercial would require a change of use and re-zoning. Site plans can be reviewed to insure that no threats are introduced into the WHPA. This recommendation is based upon the Town's experience in dealing with a well (Well 1) that was accidentally contaminated by a neighboring dry cleaning facility, as well as the recommendations from the VDH and VDEQ.</p> <p>The WPAC has discussed the potential for future disturbances and threats to the WHPA through industrial development. A large conservation easement with the Potomac Conservancy on the Salamander Resort property prevents industrial development in a significant majority of the WHPA. (See Figure C-4 in Appendix C).</p> <p>At the direction of the Council, the committee will communicate with the Town of Middleburg's maintenance personnel to assess their awareness of the WHPA and assist in the implementation of BMPs when maintaining grounds and vehicles.</p> <p>The Town of Middleburg has developed a Wellhead Protection</p>

ID #	Highest Priority PSCs/Critical Areas	Action Items
		<p>brochure that was distributed to water customers. This brochure provided consumers with instructions on how to protect and conserve their source water. Refer to Education and Outreach strategies in Table 6 for additional strategies to protect source water by educating the public.</p> <p>It is recommended that the WPAC and Go Green committee consider coordinating a household hazardous waste collection event for the area on an annual schedule. In addition, at the direction of the Council, it is recommended that the committees approach the Safeway Pharmacy and proper regulatory officials to organize a drop point for the National Take Back Initiative, in which consumers can bring back unwanted prescription medication and personal care products. Additionally, public education and outreach activities may include providing guidance for proper disposal of pharmaceuticals and personal care products to water customers, as well as in home healthcare providers such as Hospice.</p>
5-7	Public and Private Waste Water	<p>Several septic systems remain in the town limits in the WHPA Zones 1 and 2. For those septic systems outside the town limits, the WPAC should provide a copy of this plan, upon adoption, to Loudoun and Fauquier Counties. The WPAC should recommend the Council and Town staff work with Loudoun and Fauquier Counties to (1) determine how they enforce their existing septic system inspection and maintenance rule (see Appendix D for Frequently Asked Questions, provided by Loudoun County); and (2) change the requirement to pump out the systems from every five years to every three years. The WPAC should recommend the Council consider the adoption of a town ordinance that would require homeowners within the town limits to demonstrate proof that they are complying with the county ordinance.</p> <p>The Wellhead Protection Advisory Committee will also recommend a capital improvement project focused on extending lines and establishing pump stations to eliminate private septic systems. Priority should be given to those within the WHPA Zone 1, 1000' buffer.</p>
5-8	Highway Traffic and Rights-of-way Maintenance	<p>Town staff should continue to coordinate with emergency officials to be better prepared in the event of a hazardous spill. Explore the possibility of erecting signs within the WHPA to alert motor carriers of the emergency number(s) to call should a spill occur. Contact carriers that transport materials within the WHPA and identify the types of materials commonly transported. This information will be used to inform and properly prepare emergency response personnel.</p> <p>Town staff should contact the utility companies to determine the</p>

ID #	Highest Priority PSCs/Critical Areas	Action Items
		herbicides and insecticides used within the ROW and any other chemicals used. Herbicide labeling is developed with guidance from the USEPA providing information on application. This guidance has been developed with public health in mind and may list restrictions for application to prevent herbicide migration into water supplies. The Town staff should communicate the boundaries of the WHPA to raise awareness with utility companies to ensure BMPs.
5-9	Water Treatment Facilities	To protect the source water, treatment plant, and personnel, the Town's utility system staff and/or agents should regularly inspect chemical containment structures, evaluate and update materials handling procedures, and implement a "just-in-time" ordering process for chemicals if possible.

Education and Outreach Strategies

Table 6 gives an overview of strategies that the Town of Middleburg proposes to implement for education and outreach activities. The goal of the overall education and outreach plan is to raise awareness of the need to protect drinking water supplies and build support for implementation strategies.

Table 6: Education and Outreach Strategies and Implementation

ID #	Education and Outreach Strategies	Implementation
6-1	Annual Drinking Water Quality Report	The water system publishes an Annual Drinking Water Quality Report, as required by the Safe Drinking Water Act, which is provided to all water customers. Information concerning the wells, treatment, and Source Water Assessment is included in the report. In the future, the system may include a reference to this wellhead protection plan and how customers can access a copy and potentially contribute to protection activities.
6-2	Brochures	The 2008 Wellhead Protection Plan recommended that the Town of Middleburg develop a brochure describing Source Water Protection specifically for the town and promote the general education of the community on Source Water Protection. In 2012, the Town of Middleburg WPAC received a Virginia Department of Environmental Quality grant to develop and produce a brochure. This brochure was distributed to water customers in January 2013. Copies are also available in the town offices.
6-3	Webpage	The Town of Middleburg has posted the 2008 Wellhead Protection Plan on their webpage. The staff will consider creating a wellhead protection page with links to the wellhead protection plan(s), state and federal sites with protection information such as septic system

ID #	Education and Outreach Strategies	Implementation
		maintenance, private water well maintenance/construction guidance, water conservation, wellhead protection guidance, kids resources, wellhead brochure, etc. The page could also feature announcements for household hazardous waste collection or drug take back events, two possible activities being considered (See Go Green Committee below).
6-4	Go Green Committee	<p>The Town of Middleburg has a Go Green Committee that has been active for several years. The Go Green Committee has similar interests in protecting the environment and community (including the water) as the WPAC. A representative from the Go Green Committee currently sits on the WPAC and has indicated that Go Green will integrate source water protection into their efforts and specifically pursue household hazardous waste collection and drug take back projects. Should this member resign from Go Green and/or the WPAC, the WPAC recommends that the Council consider replacing her with another member of the Go Green Committee or adding a seat to the WPAC to be filled by someone from Go Green, whichever is the case.</p>
6-5	Letters and Links	<p>At the direction of the Council, the WPAC will develop letters providing educational information to residences and businesses. These will alert the recipients of the need for source water protection and conservation. See Appendix E for example letters. The letters may be modified to provide guidance for specific threats, invitations to volunteer or participate in events, or to announce public meetings and ordinances. This information should also be available on the Town's website, in the Town Office and at the Pink Box Visitor's Center.</p> <p>Several organizations provide information and resources on the internet, related to source water concerns and PSCs. These materials or websites may supplement the letters in order to provide the public with additional education resources. Examples of these websites are described below.</p> <p>The Virginia Department of Health, Office of Drinking Water hosts a page describing source water protection in the state of Virginia with several links to additional resources.</p> <p>http://www.vdh.virginia.gov/ODW/SourceWaterProtection.htm</p> <p>The Virginia Department of Environmental Quality hosts a page describing wellhead protection efforts specifically aimed at groundwater, including available grant funding.</p> <p>http://www.deq.virginia.gov/Programs/Water/WaterSupplyWaterQuality/GroundwaterProtectionSteeringCommittee/WellheadProtection.aspx</p> <p>USEPA Water Sense Simple Steps to Save Water (EPA-832-F-07-011) presents benefits of conserving water. Focusing not only on the environment, but also on the financial savings associated with conservation. The brochure can be viewed at:</p>

ID #	Education and Outreach Strategies	Implementation
		<p>http://www.epa.gov/watersense/docs/ws_simplesteps508.pdf</p> <p>The WPAC is concerned with the potential impact of pharmaceutical and personal care products on both surface and groundwater sources. Several states and the USEPA have developed guidance to consumers regarding proper disposal of these products. The following links are publications from the USEPA and US Food and Drug Administration (FDA).</p> <p>http://water.epa.gov/scitech/swguidance/ppcp/upload/ppcpflyer.pdf</p> <p>http://www.fda.gov/downloads/Drugs/ResourcesForYou/Consumers/BuyingUsingMedicineSafely/UnderstandingOver-the-CounterMedicines/ucm107163.pdf</p>
6-6	School Curricula	<p>The WPAC will consider working with the school systems, both public and private, to incorporate source water activities into the school's curricula. The committee recommends that the Town offer to send an operator to visit the schools. The Committee will develop an education program for local schools, which could include class sessions and plant tours.</p> <p>The USEPA offers free educational materials for teachers and students, including classroom lessons, fact sheets, and interactive games and activities, for grades K-12. These materials can be accessed at the following websites.</p> <p>For general source water protection: http://www.epa.gov/safewater/kids/index.html.</p> <p>For water conservation: http://www.epa.gov/watersense/kids/index.html</p> <p>Similar protection and conservation related resources can be found at the Groundwater Foundation website: http://www.groundwater.org/kc/kc.htm</p>
6-7	Plant Tours	<p>Tours of the water plant are recommended for interested organizations such as watershed groups, schools, and civic organizations, including local Emergency Responders to make them familiar with the facilities in the event of an emergency.</p>
6-8	Drinking Water Protection Signs	<p>Erecting Drinking Water Protection Signs along highways is a common awareness strategy in some states and recommended by the USEPA. Signs are placed to alert the public to the SWPA and about what to do in case of accidental spills. In order to erect a drinking water protection sign near the highway (in the right of way or in sight of the highway), the WPAC recommends the Town Council seek permission from Virginia Department of Transportation, Northern Virginia District to erect a sign. Contact information: 4975 Alliance Drive, Fairfax, VA 22030, phone: 703-383-8368. The current District Administrator is Garret Moore, PE and the current contact for maintenance for the Loudoun County area is Steve Shannon.</p>

ID #	Education and Outreach Strategies	Implementation
6-9	Emergency Planning and Coordination	Town staff and its utility agents should communicate with local fire departments and County Emergency Services on a regular basis, and when available participate in training exercises for emergency response. Once each year, the Town of Middleburg should provide emergency responders with an updated emergency information sheet that shows the WHPA, roads, and waterworks emergency contact information. If needed the Town of Middleburg will invite the emergency responders to review emergency response plans for the waterworks. Spill Response Plan: Incidents in the WHPA for which there is an emergency response by Loudoun County's Haz Mat Team are reported to the Town of Middleburg Utility Department, which in turn communicates releases to the state and county health department. Immediate action is taken to clean up the spills and minimize the potential for the substance to migrate to the groundwater.
6-10	Public Meetings	The Town of Middleburg WPAC currently holds quarterly meetings that are open to the public to discuss wellhead protection efforts. The committee intends to hold annual meetings to review the Wellhead Protection Plan and update emergency contact information. The committee will meet as needed, in order to implement future protection projects.

Contingency Planning

The goal of contingency planning (See **Appendix F**) is to identify how the Town of Middleburg will prepare for and respond to any drinking water shortages or emergencies that may occur, due to short and long term water interruption, incidents of spill or contamination.

The Town of Middleburg should seek information and participate in any existing emergency response plans or programs, such as those with Loudoun Water, Loudoun County, the state Rural Water Association, or the Virginia WARN (Water/Wastewater Agency Response Network).

The pages in **Appendix F** may be photocopied and posted in the water plant making them accessible in case of an emergency.

Implementation

Table 7 summarizes the strategies for implementing the Town of Middleburg Wellhead Protection Plan. Many implementation activities may be eligible for funding offered through the VDEQ. More information concerning the grants can be accessed by contacting program coordinator Mary Ann Massie at 804-698-4042 or visiting:

<http://www.deq.virginia.gov/Programs/Water/WaterSupplyWaterQuantity/GroundwaterProtectionSteeringCommittee/WellheadProtection.aspx>

The initial step in implementation should be to identify responsible parties and timelines to implement the strategies. WPAC members can help determine the best process and timeline for completing activities. Additional meetings may be needed during the initial effort to complete activities, after which the WPAC should consider meeting annually to review and update the Source Water Protection Plan.

Updating the Plan

The WPAC commits to reviewing and making needed updates to this Protection Plan annually or whenever there are changes in the following: major staff, PSCs near the SWPA, land use in the watershed, water quality, etc. The committee will review the contingency plan to update emergency contact numbers and procedures continually to best prepare for emergency incidents and water shortages.

The committee will provide access to Loudoun and Fauquier County officials, in order to insure that the WHPA is properly identified in the Loudoun and Fauquier County environmental planning documents.

Substantial Implementation

Virginia's definition of "substantial implementation" of source water protection measures follows:

- a. Community waterworks which have a developed strategy in-place (e.g., Wellhead Protection Plan), and
- b. Have implemented one or more recommended actions.

Recommended actions are those described in the Source Water Assessment Report (See **Appendix A**); this Source Water Protection Plan; or locally defined protective measures.

Table 7: Summary of Recommended Action Items*

ID #	ACTIVITY	RESPONSIBLE PARTY	WHEN IMPLEMENTED	COST ESTIMATE
	SOURCE MANAGEMENT ACTIVITIES			
7-1	Has ordinance that prohibits the construction of private water wells and the use of existing wells for drinking water, when residents have access to the public water works.		Complete	
7-2	Consider adoption of a town ordinance requiring proper abandonment of existing wells on properties undergoing changes requiring a site plan approval.	TBD	TBD	TBD
7-3	Consider abandonment of Well 1 and any other known wells on town property or on properties seeking abandonment assistance, prioritizing those wells closest to public drinking water wells.	TBD	TBD	TBD
7-4	Consider seeking grant funding or a capital improvement project to provide for maintenance of physical security at wellheads and treatment facilities.	TBD	TBD	TBD
7-5	Investigate current non-potable uses and solicit participation in water use agreements.	TBD	TBD	TBD
7-6	Finalize plans with the Salamander Resort detailing the steps the town can take to ensure the proper abandonment or maintenance of existing wells on the property. Consider preserving wells as a backup source, in the event that Wells 5 or 6 are taken out of service.	TBD	TBD	TBD
7-7	Identify home owners with heating oil tanks within the town limits, prioritizing those homes within the WHPA Zone 1, 1000' foot delineation. Communicate the source water vulnerability to these residents and encourage the removal of unused tanks, particularly those installed underground.	TBD	TBD	TBD
7-8	Consider adoption of an ordinance requiring inspection reports for heating oil tanks in use or removal of unused tanks on properties undergoing modifications requiring a site plan approval or rezoning by the Planning Commission.	TBD	TBD	TBD

ID #	ACTIVITY	RESPONSIBLE PARTY	WHEN IMPLEMENTED	COST ESTIMATE
7-9	Communicate with current gas station owners the need to properly dispose of oil and other automobile products and ask them to follow regulations and institute BMPs to contain and clean up spills.	TBD	TBD	TBD
7-10	Determine if groundwater remediation is ongoing at the Exxon to monitor for contamination. Request monitoring results from the VDEQ in order to understand the depth of contamination and potential for migration of the contaminants into the source water.	TBD	TBD	TBD
7-11	Consider adoption of a local ordinance that limits the amount of any substance with a Maximum Contaminant Level in drinking water, including fertilizers and pesticides that can be stored or applied in the WHPA Zone 1.	TBD	TBD	TBD
7-12	Consider increasing raw water monitoring for specific contaminants, such as nitrates/nitrites.	TBD	TBD	TBD
7-13	Work with the owner or operator of the resort, vineyard, and town/county facilities to implement an Integrated Pest Management System (IPM) and ensure the use of BMPs when applying fertilizers.	TBD	TBD	TBD
7-14	Consideration adoption of an ordinance to establish Wellhead Protection Overlay Districts, including a WHPA Zone 1 that shall be a 1,000' buffer around the Town's wells, which would be considered during zoning decisions. Limit or restrict land use within the overlay district.	TBD	TBD	TBD
7-15	Communicate with Town of Middleburg maintenance personnel to raise their awareness of the WHPA and ask that they institute BMPs when maintaining grounds and vehicles.	TBD	TBD	TBD
7-16	A large conservation easement with the Potomac Conservancy on the Salamander Resort property prevents industrial development in a portion of the WHPA.		Complete	

ID #	ACTIVITY	RESPONSIBLE PARTY	WHEN IMPLEMENTED	COST ESTIMATE
7-17	Develop a Wellhead Protection brochure to distribute to water customers.		Complete	
7-18	Coordinate household hazardous waste collection and pharmaceutical take back events for the area on an annual schedule.	TBD	TBD	TBD
7-19	Several septic systems remain in the town limits in the WHPA Zones 1 and 2. For those septic systems, consider adoption of a town ordinance that would require homeowners within the town limits to demonstrate proof that they are complying with the county ordinance.	TBD	TBD	TBD
7-20	Work with Loudoun and Fauquier Counties to (1) determine how they enforce their existing septic system inspection and maintenance rule; and (2) change the requirement for pump out from five to three years.	TBD	TBD	TBD
7-21	Consider a capital improvement project focused on extending lines and establishing pump stations to eliminate private septic systems. Priority should be given to those within the WHPA Zone 1, 1000' buffer.	TBD	TBD	TBD
7-22	Continue to coordinate with emergency officials to be better prepared in the event of a hazardous spill. Contact carriers that transport materials within the WHPA and identify the types of materials commonly transported. This information will be used to inform and properly prepare emergency response personnel.	TBD	TBD	TBD
7-23	Contact the utility companies to determine the herbicides and insecticides used within the ROW and any other chemicals used. Communicate the boundaries of the WHPA to raise awareness with utility company to ensure BMPs.	TBD	TBD	TBD
7-24	Regularly inspect chemical containment structures, evaluate and update materials handling procedures, and implement a "just-in-time" ordering process for chemicals if possible.		Ongoing	
7-25	Review the Wellhead Protection Plan annually and make updates as needed.		Ongoing	

ID #	ACTIVITY	RESPONSIBLE PARTY	WHEN IMPLEMENTED	COST ESTIMATE
7-26	Provide the Wellhead Protection Plan and/or WHPA boundaries to the Loudoun and Fauquier Counties to be included in county-wide environmental planning documents.	TBD	TBD	TBD
	EDUCATION AND OUTREACH			
7-27	Include a reference to this wellhead protection plan and how customers can access a copy and potentially contribute to protection activities in the Annual Drinking Water Quality Report		Complete	
7-28	Received a Virginia Department of Environmental Quality grant to develop and produce a brochure. This brochure will be distributed to water customers and provided in the town offices.		Complete	
7-29	Consider creating a wellhead protection page with links to the wellhead protection plan(s), state and federal sites with protection information such as septic system maintenance, private water well maintenance/construction guidance, water conservation, wellhead protection guidance, kids resources, wellhead brochure, etc.		Link to WHP Plan is currently available. May expand in future.	
7-30	Work with the Go Green Committee to integrate source water protection into their efforts and specifically pursue household hazardous waste collection and drug take back projects.	TBD	TBD	TBD
7-31	Send letters providing educational information to residences and businesses. These will alert the recipients of the need for source water protection and conservation. The letters may be modified to provide guidance for specific threats, invitations to volunteer or participate in events, or to announce public meetings and ordinances.	TBD	TBD	TBD
7-32	Provide links to source water protection related websites from federal and state agencies.	TBD	TBD	TBD
7-33	Consider working with the school systems, both public and private, to incorporate source water activities into the schools' curricula.	TBD	TBD	TBD
7-34	Request that tours of the water plant may be provided to interested organizations such as watershed groups, schools, and civic organizations. Tours may also benefit emergency responders.	TBD	TBD	TBD

ID #	ACTIVITY	RESPONSIBLE PARTY	WHEN IMPLEMENTED	COST ESTIMATE
7-35	Consider erecting Drinking Water Protection Signs.	TBD	TBD	TBD
7-36	Provide an updated emergency information sheet that shows the WHPA, roads, and waterworks emergency contact information to local emergency responders. If needed the Town of Middleburg will invite the emergency responders to review emergency response plans for the waterworks.	TBD	TBD	TBD
7-37	Incidents of spills in the WHPA for which the Loudoun County Haz Mat Team responds are reported to the Town of Middleburg Utility Department , who in turn communicates releases to the state and county health department. Immediate action is taken to clean up the spills and minimize the potential for the substance to migrate to the groundwater.		Ongoing	
7-38	Hold quarterly meetings that are open to the public to discuss wellhead protection efforts. Continue to hold meetings, at least once a year to review the Wellhead Protection Plan and update emergency contact information.		Ongoing	
	CONTINGENCY PLANNING			
7-39	Updating the Plan.		Ongoing	

*Complete details for each action item are provided in Table 5-6.

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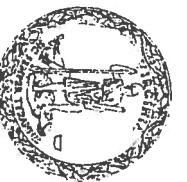
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Appendix A:
Source Water Assessment Report



COMMONWEALTH of VIRGINIA

Environmental Engineering Field Office
400 S. Main St., 2nd Floor
Culpeper, VA 22701

Department of Health
Division of Drinking Water

AUG 29 2002

Phone: (540)-829-7340
Fax: (540)-829-7337
www.vdh.state.va.us

Subject: Loudoun County
Water: Town of Middleburg

Source Water Assessment

Mr. Charles Hartgrove
10 W. Marshall Street
Middleburg, VA 20118

Dear Waterworks Owner:

The Culpeper Field Office of the Virginia Department of Health, Division of Drinking Water has completed a Source Water Assessment for your waterworks. Attached you will find a copy of the assessment. Please take a few minutes to look over your copy. The availability of the Source Water Assessment Report is the first step in assisting in the preparation of a Source Water Protection Program (SWPP). The Virginia Department of Health is available to provide technical assistance to waterworks interested in developing a SWPP.

Please note that the susceptibility class assigned is relative and not intended to be a definitive determination.

Please note that the maps included in the report are considered by our office to be sensitive and therefore excluded from the Freedom of Information Act. A public service announcement describing the results of the assessment is being submitted to a local newspaper for their optional use, as required under the Virginia Source Water Assessment Program.

A brief summary of the susceptibility to contamination of each drinking water source must be included in the next and subsequent Consumer Confidence Reports issued by the waterworks.

Please contact me if you have any questions concerning this assessment.

Sincerely,

Hamid R. Golezorkhi
District Engineer

HRG/tjb
Attachment
cc: Local Health Department
DDW - Central

VIRGINIA DEPARTMENT OF HEALTH
SOURCE WATER ASSESSMENT REPORT

WATERWORKS: Middleburg, Town of

DATE: August 2, 2002

CITY/COUNTY: Loudoun

PWSID NO: 6107450

OWNER: Town of Middleburg

TYPE: Community

For each source serving the subject waterworks this report includes: maps showing the source water assessment area (divided into Zones 1 and 2 with Zone 1 having greater influence on the source), an inventory of known Land Use Activities of Concern and Potential Conduits to Groundwater within the assessment area, a determination of its susceptibility to contamination, and documentation of any known contamination within the last 5 years. Information in this report is provided to aid in efforts toward Source Water Protection.

The Source Water Assessment of the subject waterworks has yielded the following results:

Source Name	Susceptibility to Contamination	Explanation
Well 2	High	Groundwater source constructed in an area that tends to promote migration of contaminants with land use activities of concern and potential conduits to groundwater in the Zone 1 assessment area
Well 3	High	Groundwater source constructed in an area that tends to promote migration of contaminants with land use activities of concern in the Zone 1 assessment area and potential sources of contamination in the Zone 1 or Zone 2 assessment areas

The criteria utilized for placement into a particular susceptibility class is included on the attached Source Water Susceptibility Determination Form (Form A). Explanations for selection of a susceptibility class are included on Chart A. A list of definitions of key terms used in this report is included on Chart B.

There are Land Use Activities of Concern and Potential Sources of Contamination located in Zone 1 for Well 3.

The Land Use Activity and Potential Sources of Contamination sites are shown on the Zone 1 map and inventoried on the attached "Ranking of Land Use Activity and Potential Sources of Contamination (Form E)" for this source, ranked in order of greater public health risk. The Potential Conduits to Groundwater are shown in Zone 1 and inventoried on the "Potential Conduits to Groundwater Inventory Form (Form F)" for this source.

There are Land Use Activities of Concern and Potential Conduits to Groundwater located in Zone 1 for Well 2. The Land Use Activity sites are shown on the Zone 1 map and inventoried on the attached "Ranking of Land Use Activity and Potential Sources of Contamination (Form E)" for this source, ranked in order of greater public health risk. The Potential Conduits to Groundwater are shown in Zone 1 and inventoried on the "Potential Conduits to Groundwater Inventory Form (Form F)" for this source.

There are Potential Sources of Contamination known to be located in Zone 1 and Zone 2 for Well 3. The Potential Sources of Contamination are shown on the Zone 2 map and inventoried on the attached "Potential Sources of Contamination in Zone 1 and 2 (Form D)" completed for this source.

There has been no known contamination of Well 2 within the last 5 years.

A listing of known contamination of Well 3 within the last 5 years is on the attached "List of Known Contamination Documentation Form (Form B)" for this source.

The source waters for this waterworks have been categorized in accordance with the following table:

Source Name	Source Water Type
Well 2	Groundwater
Well 3	Groundwater

Based on the source types, the following assessment area delineations have been assigned in accordance with the guidance of the Virginia Source Water Assessment Program and are shown on the attached maps prepared for each source:

- Zone 1 = 1000-foot fixed radius surrounding source
- Zone 2 = 1-mile fixed radius surrounding source and outside of Zone 1

The following attachments are part of this report (one for each source):

- [X] Assessment Area Maps
- [X] Source Water Susceptibility Determination (Form A)
- [X] Known Contamination Documentation Form (Form B)
- [X] Potential Sources of Contamination in Zone 1 and 2 (Form D)
- [X] Ranking of Land Use Activity and Potential Sources of Contamination (Form E)
- [X] Potential Conduits to Groundwater Inventory Form (Form F)
- [X] Chart A (Susceptibility Explanations)
- [X] Chart B (Key Definitions)

Chart A

Susceptibility Classes

Susceptibility	Explanation
Very low	[choose] [Properly constructed groundwater source located in an area that tends to inhibit contaminant migration, is protected with an appropriate aquitard, and has had no known detection of contamination within the last 5 years] [or] [Properly constructed groundwater source located in an area that tends to promote contaminant migration (or provide little protection against contaminant migration), but determined by the U. S. Geological Survey to be developed in a 'confined' or 'nonsensitive' aquifer within that groundwater area] with neither land use activities of concern nor potential conduits to groundwater in the Zone 1 assessment area nor potential sources of contamination in the Zone 1 or Zone 2 assessment areas
Low	[choose] [Properly constructed groundwater source located in an area that tends to inhibit contaminant migration, is protected with an appropriate aquitard, and has had no known detection of contamination within the last 5 years] [or] [Properly constructed groundwater source located in an area that tends to promote contaminant migration (or provide little protection against contaminant migration), but determined by the U. S. Geological Survey to be developed in a 'confined' or 'nonsensitive' aquifer within that groundwater area] with [choose] [land use activities of concern][and][potential conduits to groundwater] in the Zone 1 assessment area][potential sources of contamination in the Zone 1 or Zone 2 assessment areas]
Moderate	[choose] [Groundwater source constructed in an area that tends to promote migration of contaminants] [or] [Groundwater source located in an area that tends to inhibit contaminant migration but unprotected by an appropriate aquitard] [or] [Groundwater source located in an area that tends to inhibit contaminant migration in which contaminants have been detected within the past five years] with neither land use activities of concern nor potential conduits to groundwater in the Zone 1 assessment area nor potential sources of contamination in the Zone 1 or Zone 2 assessment areas
High	[choose] [Groundwater source constructed in an area that tends to promote migration of contaminants] [or] [Groundwater source construction is unknown or inadequate] [or] [Groundwater source located in an area that tends to inhibit contaminant migration but is unprotected by an appropriate aquitard] [or] [Groundwater source located in an area that tends to inhibit contaminant migration in which contaminants have been detected within the past five years] with [choose] [land use activities of concern][and][potential conduits to groundwater] in the Zone 1 assessment area [and potential sources of contamination in the Zone 1 or Zone 2 assessment areas]
Moderate	[choose] [Surface water] [or] [Groundwater under the direct influence of surface water source] exposed to an inconsistent array of contaminants at varying concentrations due to changing hydrologic, hydraulic and atmospheric conditions with no land use activities of concern in the Zone 1 assessment area
High	[choose] [Surface water] [or] [Groundwater under the direct influence of surface water source] exposed to an inconsistent array of contaminants at varying concentrations due to changing hydrologic, hydraulic and atmospheric conditions with land use activities of concern in the Zone 1 assessment area

Chart B: Definitions of Key Terms

Aquifer:	A water bearing geological unit that will yield water to wells or springs.
Aquitard:	An underground confining bed of earthen material that retards, but does not prevent, the flow of water between adjacent aquifers.
Best Management Practices:	Practices utilized by the owner and/or operator of land use activities in attempts to reduce or eliminate contamination of the environment.
Community Waterworks:	A waterworks which serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents.
Confined or Nonsensitive Aquifer:	An aquifer that is bounded by impervious confining layers both at the top and the bottom. Also referred to as an artesian aquifer
Delineation:	The process of defining or mapping a boundary that approximates the areas that contribute water to a particular water source used as a public water supply. For surface waters, the land area usually consists of the watershed for a reservoir or stream. For groundwater sources, the boundary typically approximates the surface area that contributes water to the aquifer.
Groundwater:	Water that is beneath the ground and that does not meet the definition of surface water.
Groundwater Under the Direct Influence of Surface Water:	A groundwater with (i) significant occurrence of insects, microorganisms, algae, or pathogens, or (ii) significant and relatively rapid shifts in water characteristics which closely correlate to climatological or surface water conditions. The Virginia Department of Health designates a groundwater source meeting certain conditions as a Groundwater Under the Direct Influence of Surface Water in accordance with 12 VAC 5-590-430 of the <i>Waterworks Regulations</i> .
Identified Flowing Surface Source	A surface water stream that enters the groundwater by flowing into a sinkhole, leaking through the bottom of a stream bed, or by other means and which has been verified through tracer or other studies to reemerge from the ground as a spring or through a well; or which flows beneath broken rubble (which is strewn down the side of a mountain) with openings to the atmosphere and which is collected at a 'springbox'
Impoundment Source Intake:	A raw water intake that feeds from a surface water consisting of a reservoir or other type of impoundment.
Land Use Activity:	An activity that stores, uses, or produces chemicals or biological pathogens and that has the potential to release such contaminants within the source water assessment area.
Non-Community Waterworks:	A waterworks that is not a community waterworks but serves any 25 or more persons for 60 or more days per year.
Non-Tidal Source Intake:	A raw water intake that feeds from a surface water that is not influenced by tidal action and possesses a stream flow which travels downgradient.
Non-Transient Non-Community Waterworks:	A waterworks that is not a community waterworks but that regularly serves at least 25 of the same persons for 6 months or more per year.

Chart B: Definitions of Key Terms

Page 2

Potential Conduits to Groundwater:

A fracture, sinkhole, drilled hole, well or any type of conduit through the ground that has the potential to carry surface water or surface runoff directly into a groundwater.

Potential Sources of Contamination:

A land use activity whose presence and location have been identified in selected state, federal, or private databases during the assessment.

Raw Water Intake:

The suction intake that draws water from a surface water source for use as a public water supply.

Sensitivity:

The relative ease with which a contaminant applied near the land surface, or to the subsurface, can migrate to the delineated source water area.

Source Water Assessment:

An assessment to provide information on the potential contaminant threats to the water source(s) of a waterworks and the susceptibility of those sources to contamination.

Surface Water:

Water open to atmosphere and subject to receiving surface runoff.

Susceptibility to Contamination:

The determined classification (or rating) of the susceptibility of a source to contamination based on its sensitivity and the presence of land use activities of concern, potential sources of contamination, or potential conduits to groundwater (for groundwater sources only) within the assessment area. This classification is not intended to be definitive.

Tidal Source Intake:

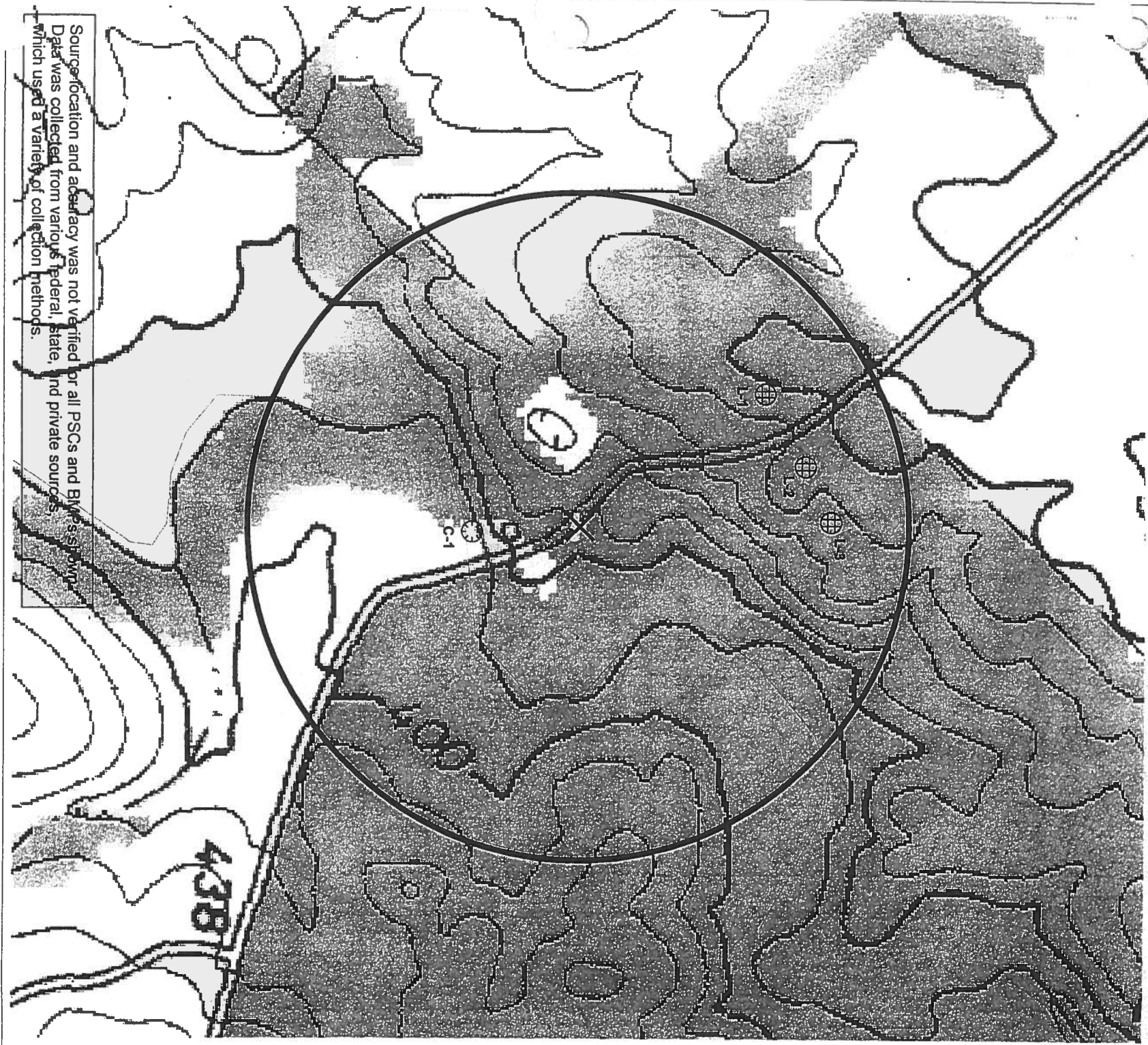
A raw water intake that feeds from a surface water that is influenced by tidal action resulting in a stream flow that travels in either direction based on the rise or fall of moon or wind driven tides.

Upgradient:

The directions from a source in which ground elevation rises with distance. Opposite is downgradient. Water will flow downgradient.

Watershed:

A topographical area that is within a line drawn connecting the highest points uphill of a drinking water intake from which overland flow drains to a water supply intake.



Ground Water Sources

Selected Water Source

LUA Polygons

PC Polygons

Land Use Activities (L-#)

Potential Candidate (C-#)

Best Management Practices (B-#)

Division of Water Supply Engineering
Protecting You and Your Environment

200 0 200 400 Feet

Print Date July 2001

Land Use

Discharge - No Discharge P-#

Discharge

No Discharge

DEQSWRO - Storage Tank Releases

Active

Closed

Airports

Industrial Sites

Superfund Sites

Oil Closures

Underground Injection Wells

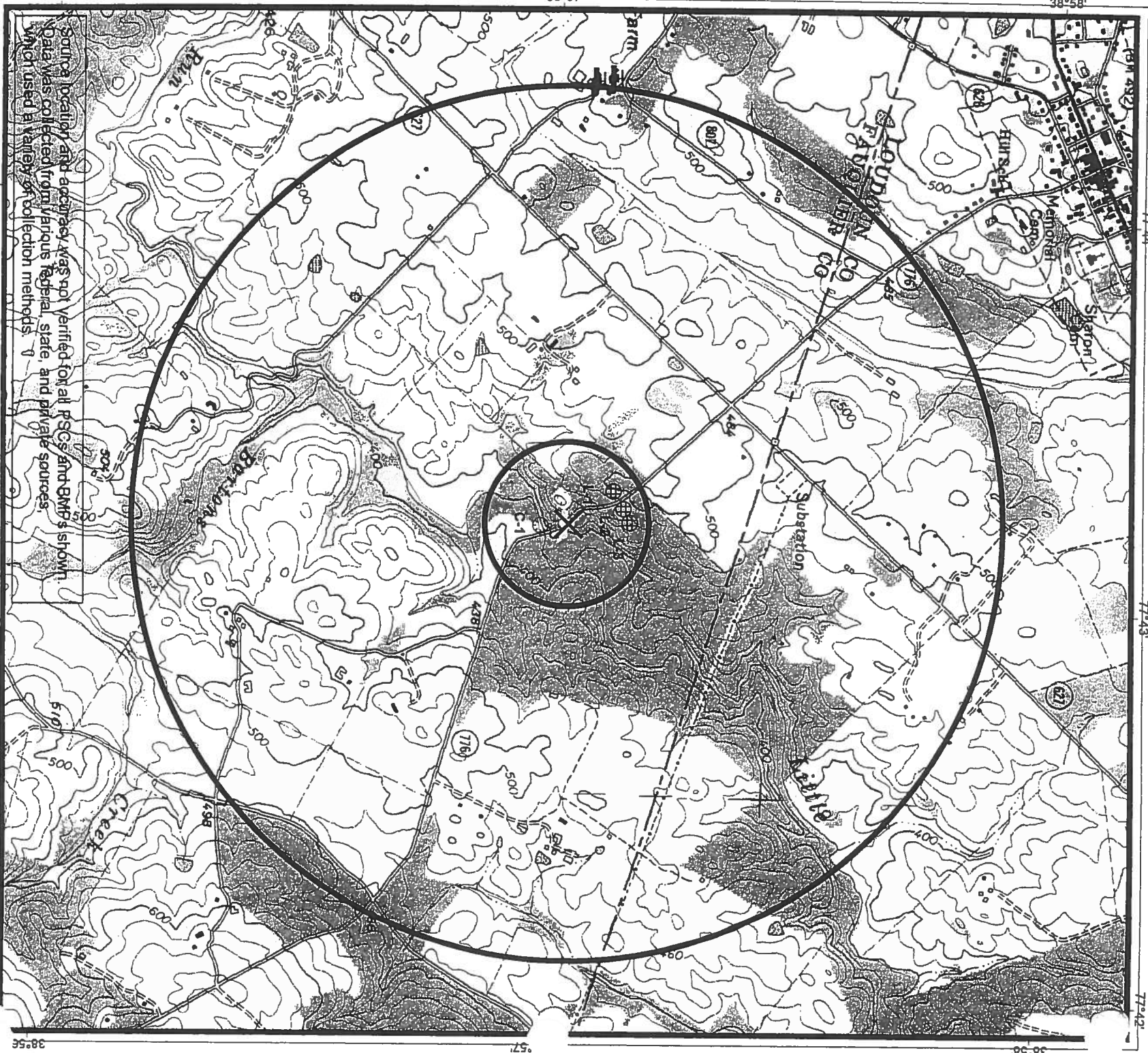
Hazardous and RCRA Sites

Hospitals

Tire Piles

SWAP Zone 2 Map

DISTRICT 08
COUNTY/CITY: LOUDOUN



Ground Water Sources

- Selected Water Source
- Land Use Activities (L-#)
- Potential Contaminants (C-#)
- Best Management Practices (B-#)
- PC Polygons

Division of Water Supply Engineering

800 0 800 1600 Feet

Print Date July 2001

Potential Sources of Contamination (P-#)

- Landfills
- Discharge - No Discharge Facilities
- Discharge
- No Discharge
- DEQSWRO - Storage Tank Releases
- Adverse
- Closed

Potential Sources of Contamination (P-#)

- Airports
- Industrial Sites
- Superfund Sites
- Gas Refineries
- Underground Injection Wells
- Hazardous and RCRA Sites
- Hospitals
- Tire Piles

Source Water Susceptibility Determination (Form A)

Subject: Loudoun Water: Middleburg Town of PWSID# 6167450 Source Name: well # 32

Evaluated by: AJ Date: 7-30-02 Reviewed by: HRL Date: 8/28/02

Step		CIRCLE ANSWER		
		YES	NO	
1	Has a nitrate concentration > 5 mg/L been detected in the past 5 years? Has a nitrite concentration > 0.5 mg/L been detected in the past 5 years? Have any SOC/VOC contaminants (excluding TTHM's) been detected in the past 5 years? Has a combined Radium 226 and Radium 228 concentration > 5 pCi/L in 2 or more samples been detected in past 5 years? Has detection of any IOC contaminant exceeded the PMCL in 2 or more samples in the past 5 years?	(If any are) Go to step 11	(If none are) Go to step 2	
2	Is source water type a surface water or GUDIS?	Circle step 12	Go to step 3	
3	Identify the groundwater area where the source is located using the 1985 Groundwater Map of Virginia prepared by the Virginia Water Control Board. Is the source located in the Mountainous Terrain Ground Water Area, or the Miocene, Paleocene-Eocene or Cretaceous Aquifers of the Coastal Plain Ground Water Area?	Go to step 5	Go to step 4	
4	Is the source located in a confined or nonsensitive aquifer as determined by the U.S. Geological Survey Aquifer Susceptibility Study? If unknown, answer 'no'.	Go to step 5	Circle step 12	
5	Is the geometric mean > 3 TC/100 ml in 20 or more source (raw) water samples collected in the last 5 years? Have fecal coliform been detected in 2 or more source samples collected in the past 5 years?	(If either is) Go to step 11	(If both are) Go to step 6	
6	Is the source a Class IIB (or better) well constructed in accordance with the Waterworks Regulations?	Go to step 7	Circle step 12	
7	Does a driller's log or the U.S. Geological Survey study clearly indicate that an aquitard is present?	Go to step 8	Circle step 12	
8	Does evidence exist to suggest the aquitard does not extend over the entire assessment area?	Circle step 12	Go to step 9	
9	Do any identified Potential Conduits to groundwater (table 3) penetrate the aquitard? If unknown, answer 'Yes'.	Go to step 12	Go to step 10	
10	Does the most recent sanitary survey confirm that the source construction conforms to the construction standards of the Waterworks Regulations?	Circle step 13	Circle step 12	
11	List detected contaminant(s) and sample dates on Form B List of Known Contamination Documentation Form.	Circle step 12		
12	Source <u>IS</u> Sensitive.	Go to step 14		
13	Source <u>IS NOT</u> Sensitive.	Go to step 14		
14	Does a Land Use Activity or PSC exist in the Zone 1 assessment area or, for groundwater sources: does a potential conduit to groundwater exist in Zone 1 or; does a potential source of contamination exist in Zone 2?	Go to step 15	Go to step 15	
15	CIRCLE THE SUSCEPTIBILITY OF THE SOURCE IN THE APPROPRIATE ROW ON THE CHART BELOW			
	Source Water Type	Sensitive Source	LUA, PSC or PC Present in Assessment Area	Susceptibility
	Groundwater	No	No	Very Low
	Groundwater	No	Yes	Low
	Groundwater	Yes	No	Moderate
	Groundwater	Yes	Yes	High
	Surface Water	Yes	No	Moderate
	Surface Water	Yes	Yes	High

Known Contamination Documentation Form (Form B)

Subject: Loudoun

Water: Middleburg, Town of PWSID# 6107450 Source Name: well #2

Compiled by: AJ

Date: 7-30-02

Reviewed by: HLG

Date: 8/28/02

Where applicable, circle 'yes' or 'no'. Note: listing is based on last 5 years of data

MICROBIAL CONTAMINATION

- a. Has a geometric mean determination for 20 or more total coliform samples been conducted in the past 5 years? YES ☒ NO
- b. If 'yes', does the geometric mean exceed 3 col./100 ml? YES NO If 'yes', what was the geometric mean? _____ col./100 ml.
- c. Have fecal coliform bacteria been detected in 2 or more source samples collected in the past 5 years? YES ☒ NO
- d. If 'yes', list the laboratory sample identification number(s) and sample collection date(s):

NITRATE CONTAMINATION

- a. Has the nitrate concentration in any sample collected in the past 5 years exceeded 5 mg/L? YES ☒ NO
- b. If 'yes', list the laboratory sample identification number(s), sample collection date(s) and nitrate concentration(s) under line 'c':
- c. Was the 10 mg/L MCL exceeded? YES NO

NITRITE CONTAMINATION

- a. Has the nitrite concentration in any sample collected in the past 5 years exceeded 0.5 mg/L? YES ☒ NO
- b. If 'yes', list the laboratory sample identification number(s), sample collection date(s) and nitrite concentration(s) under line 'c':
- c. Was the 1 mg/L MCL exceeded? YES NO

SOC/VOC CONTAMINATION

- a. Have any SOC/VOC contaminants (excluding TTHM's) been detected in the past 5 years? YES ☒ NO
- b. If 'yes', list the laboratory sample identification number(s), sample collection date(s), SOC/VOC contaminant(s) and SOC/VOC concentration(s) under line 'c':
- c. Was any SOC/VOC MCL exceeded? YES NO If yes, circle samples which exceeded the MCL.

RADIUM 226 AND RADIUM 228 CONTAMINATION

- a. Has a combined Radium 226 and Radium 228 concentration exceeded the 5 pCi/L MCL in 2 or more samples collected in the past 5 years? YES ☒ NO
- b. If 'yes', list the laboratory sample identification number(s), sample collection date(s) and Radium 226 and Radium 228 concentration(s):
- c. Was the Radium 226 and Radium 228 MCL exceeded? YES NO If yes, circle samples which exceeded the MCL.

INORGANIC CHEMICAL CONTAMINATION

- a. Has any inorganic chemical contaminant in any sample collected in the past 5 years equaled or exceeded its respective PMCL? YES ☒ NO
- b. If 'yes', list the laboratory sample identification number(s), sample collection date(s) and contaminant concentration(s):

Ranking of Land Use Activity and Potential Sources of Contamination (Form E)

Subject: LOUDOUN

Water: MIDDLEBURG, TOWN OF **PWSID#:** 6107450 **Source Name:** WELL# 2

Evaluated by:

Date: 4/17/01

Reviewed by: Jeremy D. Hull

Date: _____

Map ID #	Unique ID	Risk Type	Classification of Contaminant Source	Comments	Verified*	Property Owner	Mailing Address (Street or POB, Town)
L-1	1016	Medium	On-site sewage system		4/11/01	Karleene Sullivan	PO Box, Middleburg VA 20118
L-2	1017	Medium	On-site sewage system		4/11/01	Anne Pepper	PO Box 2300, Middleburg VA 20118-2300
L-3	1018	Medium	On-site sewage system		4/11/01	James Rowley	PO Box 87, Middleburg VA 20118-0087

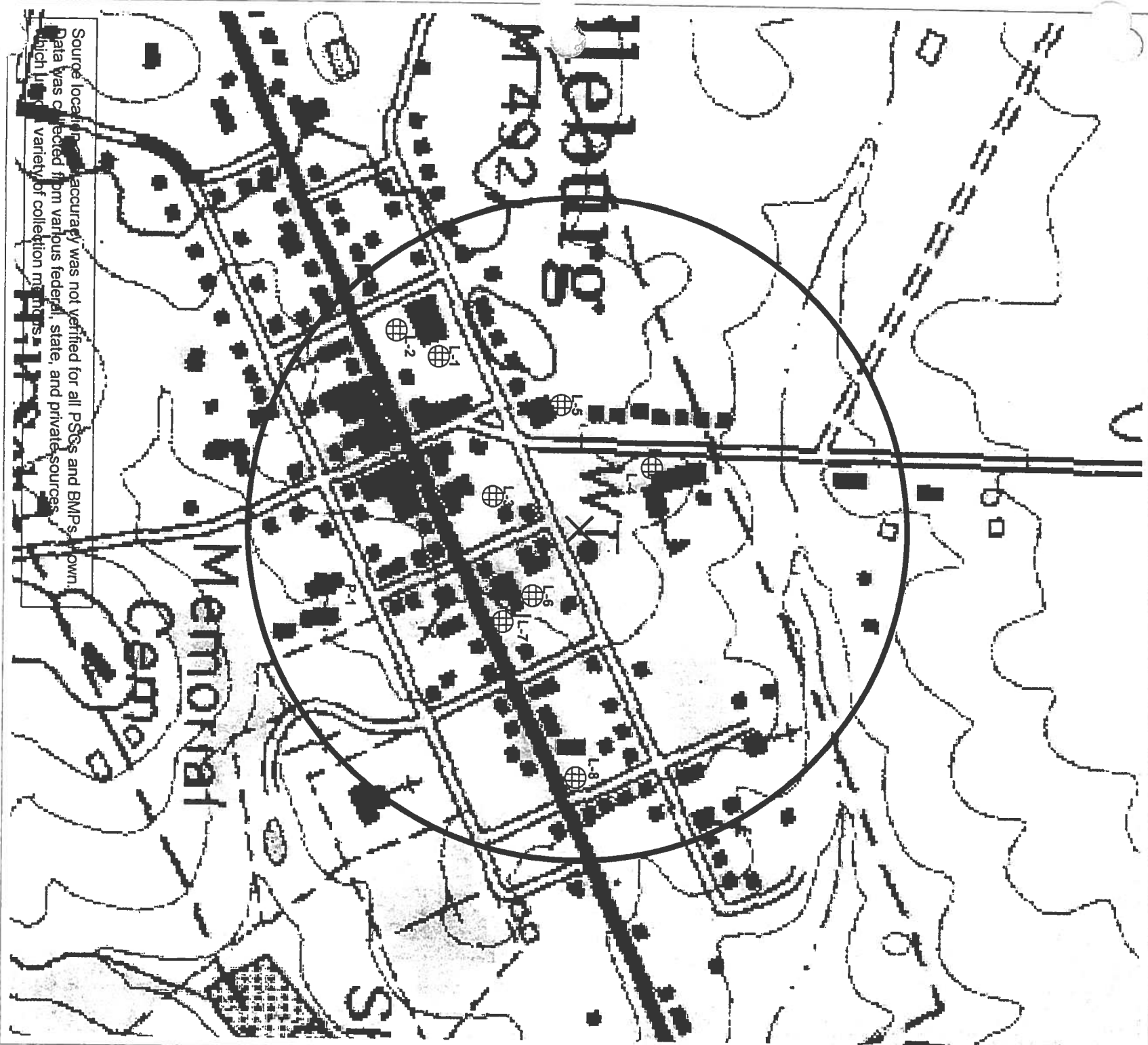
*Verified -- Date evaluator has determined that contaminant(s) are used or stored at the site.

Potential Conduits to Groundwater Inventory Form (Form F)

Subject: LOUDOUN Water: MIDDLEBURG, TOWN PWSID#: 6107450 Source Name: WELL# 2
OF

Compiled by: Date: 4/12/01 Reviewed by: Jeremy D. Hull Date:

Map ID #	Type of Conduit	Estimated Distance from Well (feet)	Comments
C-1	Ponds, streams	322	



Ground Water Sources

Selected Water Source

LUA Polygons

PC Polygons

Land Use Activities (L-#)

Potential Conduits (C-#)

Best Management Practices (B-#)

200 0 200 400 Feet

Division of Drinking Water

Print Date May 2002

Landfills

Discharge - No Discharge Facilities

Discharge

No Discharge

DECSWRO - Storage Tank Releases

Active

Closed

Airports

Industrial Sites

Superfund Sites

Golf Courses

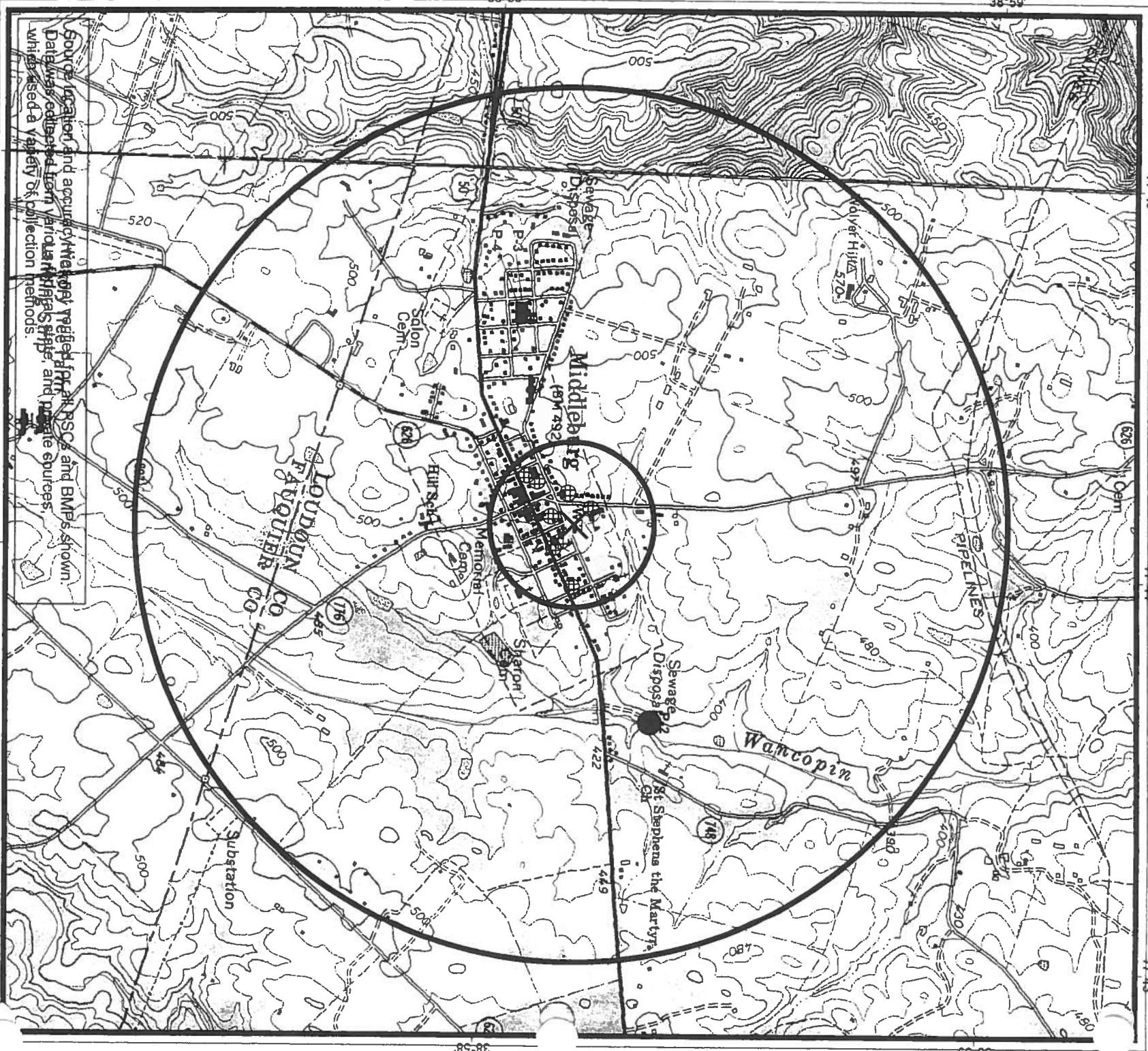
Underground Injection Wells

Hazardous and RCRA Sites

Tire Piles

SWAP Zone 2 Map

DISTRICT 08
COUNTY/CITY: LOUDOUN



Source location and acquisition methodology were not used for this map. Data was collected from various sources, including aerial photography, and ground-based data collection methods.

- Ground Water Sources
- Selected Water Source
- Land Use Activities (L-#)
- Potential Conduits (C-#)
- Best Management Practices (B-#)
- PC Polygons

VDH VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY
Division of Drinking Water
Protecting You and Your Environment

800 0 800 1600 Feet
Print Date May 2002

- Landfills
- Discharge - No Discharge Facilities
- Discharge
- No Discharge
- DEQSWRO - Storage Tank Releases
- Active
- Closed

- Airports
- Industrial Sites
- Superfund Sites
- Gas Corrosion
- Underground Injection Wells
- Hazardous and RCRA Sites
- Hospitals
- Tire Piles

Potential Sources of Contamination (P-#)

Source Water Susceptibility Determination (Form A)

Subject: Loudoun Water: Middleburg Town of PWSID# 6107450 Source Name: well # 3

Evaluated by: *AF* Date: 7-30-02 Reviewed by: *HRL* Date: 8/28/02

Step		CIRCLE ANSWER		
		YES	NO	
1	Has a nitrate concentration > 5 mg/L been detected in the past 5 years? Has a nitrite concentration > 0.5 mg/L been detected in the past 5 years? Have any SOC/VOC contaminants (excluding TTHM's) been detected in the past 5 years? Has a combined Radium 226 and Radium 228 concentration > 5 pCi/L in 2 or more samples been detected in past 5 years? Has detection of any IOC contaminant exceeded the PMCL in 2 or more samples in the past 5 years?	(If any are) Go to step 11	(If none are) Go to step 2	
2	Is source water type a surface water or GUDIS?	Circle step 12	Go to step 3	
3	Identify the groundwater area where the source is located using the 1985 Groundwater Map of Virginia prepared by the Virginia Water Control Board. Is the source located in the Mountainous Terrain Ground Water Area, or the Miocene, Paleocene-Eocene or Cretaceous Aquifers of the Coastal Plain Ground Water Area?	Go to step 5	Go to step 4	
4	Is the source located in a confined or nonsensitive aquifer as determined by the U.S. Geological Survey Aquifer Susceptibility Study? If unknown, answer 'no'.	Go to step 5	Circle step 12	
5	Is the geometric mean > 3 TC/100 ml in 20 or more source (raw) water samples collected in the last 5 years? Have fecal coliform been detected in 2 or more source samples collected in the past 5 years?	(If either is) Go to step 11	(If both are) Go to step 6	
6	Is the source a Class IIB (or better) well constructed in accordance with the Waterworks Regulations?	Go to step 7	Circle step 12	
7	Does a driller's log or the U.S. Geological Survey study clearly indicate that an aquitard is present?	Go to step 8	Circle step 12	
8	Does evidence exist to suggest the aquitard does not extend over the entire assessment area?	Circle step 12	Go to step 9	
9	Do any identified Potential Conduits to groundwater (table 3) penetrate the aquitard? If unknown, answer 'Yes'.	Go to step 12	Go to step 10	
10	Does the most recent sanitary survey confirm that the source construction conforms to the construction standards of the Waterworks Regulations?	Circle step 13	Circle step 12	
11	List detected contaminant(s) and sample dates on Form B List of Known Contamination Documentation Form.	Circle step 12		
12	Source <u>IS</u> Sensitive.	Go to step 14		
13	Source <u>IS NOT</u> Sensitive.	Go to step 14		
14	Does a Land Use Activity or PSC exist in the Zone 1 assessment area or, for groundwater sources: does a potential conduit to groundwater exist in Zone 1 or; does a potential source of contamination exist in Zone 2?	Go to step 15	Go to step 15	
15	CIRCLE THE SUSCEPTIBILITY OF THE SOURCE IN THE APPROPRIATE ROW ON THE CHART BELOW			
	Source Water Type	Sensitive Source	LUA, PSC or PC Present in Assessment Area	Susceptibility
	Groundwater	No	No	Very Low
	Groundwater	No	Yes	Low
	Groundwater	Yes	No	Moderate
	Groundwater	<u>Yes</u>	<u>Yes</u>	<u>High</u>
	Surface Water	Yes	No	Moderate
	Surface Water	Yes	Yes	High

Known Contamination Documentation Form (Form B)

Subject: Loudoun

Water: Middleburg, Town of PWSID# 6107450 Source Name: well #3

Compiled by: AZ

Date: 7-30-02

Reviewed by: HRL

Date: 8/28/02

Where applicable, circle 'yes' or 'no'. Note: listing is based on last 5 years of data

MICROBIAL CONTAMINATION

- a. Has a geometric mean determination for 20 or more total coliform samples been conducted in the past 5 years? YES ☒ NO
- b. If 'yes', does the geometric mean exceed 3 col./100 ml? YES NO If 'yes', what was the geometric mean? _____ col./100 ml.
- c. Have fecal coliform bacteria been detected in 2 or more source samples collected in the past 5 years? YES ☒ NO
- d. If 'yes', list the laboratory sample identification number(s) and sample collection date(s):

NITRATE CONTAMINATION

- a. Has the nitrate concentration in any sample collected in the past 5 years exceeded 5 mg/L? YES ☒ NO
- b. If 'yes', list the laboratory sample identification number(s), sample collection date(s) and nitrate concentration(s) under line 'c':
- c. Was the 10 mg/L MCL exceeded? YES NO

NITRITE CONTAMINATION

- a. Has the nitrite concentration in any sample collected in the past 5 years exceeded 0.5 mg/L? YES ☒ NO
- b. If 'yes', list the laboratory sample identification number(s), sample collection date(s) and nitrite concentration(s) under line 'c':
- c. Was the 1 mg/L MCL exceeded? YES NO

SOC/VOC CONTAMINATION

- a. Have any SOC/VOC contaminants (excluding TTHM's) been detected in the past 5 years? YES ☒ NO
- b. If 'yes', list the laboratory sample identification number(s), sample collection date(s), SOC/VOC contaminant(s) and SOC/VOC concentration(s) under line 'c':
- c. Was any SOC/VOC MCL exceeded? YES ☒ NO If yes, circle samples which exceeded the MCL.

694729 3-27-01 178E 5.4 ppb

RADIUM 226 AND RADIUM 228 CONTAMINATION

- a. Has a combined Radium 226 and Radium 228 concentration exceeded the 5 pCi/L MCL in 2 or more samples collected in the past 5 years? YES ☒ NO
- b. If 'yes', list the laboratory sample identification number(s), sample collection date(s) and Radium 226 and Radium 228 concentration(s):
- c. Was the Radium 226 and Radium 228 MCL exceeded? YES NO If yes, circle samples which exceeded the MCL.

INORGANIC CHEMICAL CONTAMINATION

- a. Has any inorganic chemical contaminant in any sample collected in the past 5 years equaled or exceeded its respective PMCL? YES ☒ NO
- b. If 'yes', list the laboratory sample identification number(s), sample collection date(s) and contaminant concentration(s):

Potential Sources of Contamination in Zone 1 (Form D)

Subject: LOUDOUN

Water: MIDDLEBURG, TOWN
OF

PWSID#: 6107450

Source Name: WELL #3

Compiled by: PAL

Date: 05/17/02

Reviewed by: Source Water Supervisor Date: 05/17/02

Map ID #	Unique ID	Description of Contaminant Source	Property Owner	Mailing Address (Street or POB, Town)
P-1	5849732	Offset & letterpress printing & computer typesetting	Middleburg Printers	PO Box 1121 Middleburg VA 20118

Potential Sources of Contamination in Zone 1 and 2 (Form D)

Subject: LOUDOUN Water: MIDDLEBURG, TOWN PWSID#: 6107450 Source Name: WELL #3
OF

Compiled by: PAL Date: 05/17/02 Reviewed by: Source Water Supervisor Date: 05/17/02

Map ID #	Unique ID	Description of Contaminant Source	Property Owner	Mailing Address (Street or POB, Town)
P-1	5849732	Offset & letterpress printing & computer typesetting	Middleburg Printers	PO Box 1121 Middleburg VA 20118
P-2	VA0024775	Discharge -- No Discharge Facilities	Middleburg WWTP	P.O. Box 187 Middleburg VA 22117
P-3	5852108	Magazine publishing	Nova Scope Inc	200 W Washington St Middleburg VA 20117
P-4	8228551	Custom millwork, wood cabinets & furniture	Middleburg Millwork Inc	106 S Madison St Middleburg VA 20117-0407

Ranking of Land Use Activity and Potential Sources of Contamination (Form E)

Subject: LOUDOUN

Water: MIDDLEBURG, TOWN OF PWSID#: 6107450 Source Name: WELL #3

Evaluated by: Donna Chabot Halterman Date: 11/26/01

Reviewed by: Hamid R. Golesorkhi

Date: 8/28/02

Map ID #	Unique ID	Risk Type	Classification of Contaminant Source	Comments	Verified*	Property Owner	Mailing Address (Street or POB, Town)
L-8	3816	Medium	Gasoline Station/Service Center	Gasoline Station		Exxon	PO Box 53, Houston TX 77011
P-1	5849732	Medium	Offset & letterpress printing & computer typesetting			Middleburg Printers	PO Box 1121 Middleburg VA 20118
P-3	5852108	Medium	Magazine publishing			Nova Scope Inc	200 W Washington St Middleburg VA 20117
P-4	8228551	Medium	Custom millwork, wood cabinets & furniture			Middleburg Millwork Inc	106 S Madison St Middleburg VA 20117-0407
L-6	3814	Low	Parking Lots			Royston Funeral Home	PO Box 163, Middleburg VA 20118
L-3	3811	Low	Parking Lots			Red Fox Inc	PO Box 385, Middleburg VA 20118
L-4	3812	Low	Parking Lots			County of Loudoun	PO Box 7000, Leesburg VA 20177
L-7	3815	Low	Funeral Home/Mortuary	Funeral Home		Royston Funeral Home	PO Box 163, Middleburg VA 20118
L-5	3813	Low	Parking Lots			Red Fox Inc	PO Box 385, Middleburg VA 20118
L-1	3809	Low	Parking Lots			Safeway	5918 Stoneridge Mall Rd
L-2	3810	Low	Parking Lots			Safeway	Pleasanton CA 94588-3229
P-2	VA0024775	Low	Discharge -- No Discharge Facilities			Middleburg WWTP	P.O. Box 187 Middleburg VA 22117

*Verified -- Date evaluator has determined that contaminant(s) are used or stored at the site.

Appendix B:

WHPA Characterization

Geology

The following is an excerpt from the Wellhead Protection, A Handbook for Local Governments in Virginia, prepared by The Institute of Environmental Negotiation, Department of Urban and Environmental Planning, School of Architecture, University of Virginia, prepared for the Virginia Ground Water Protection Steering Committee in or around 1991.

"The Piedmont Province is characterized by broad rolling hills and moderate slopes valleys. Hard, crystalline igneous and metamorphic formations dominate this region with some areas of sedimentary rocks, with sapolite deposits overlying the bedrock. The size and number of fractures and faults in the bedrock which store and transmit ground water decrease with depth, so most significant water supplies are found within a few hundred feet of the surface. Fairly large yields of water can be obtained where fracture and fault systems are extensive, as in the Western Piedmont along the base of the Blue Ridge Mountains. The diversity of the subsurface geology of the Piedmont Province results in the wide variations in ground water quality and well yields, with ground water use at many locations limited. A few areas, for example, have problems with high iron concentrations and acidity. Because of the range in ground water quality and quantity in this region, as well as the subsequent varying potential for contamination, well site evaluations and well monitoring is very important here. From a wellhead protection standpoint, assumptions about the porosity and permeability of the overlying sapolite may have to be made so that reasonable estimates of wellhead protection areas can be calculated."

"Blue Ridge: The Blue Ridge Province is a relatively narrow zone to the west of the Piedmont, from 4 to 25 miles wide, with mountains of some of the highest elevations in the state. Beneath a thin layer of soil and weathered rock lies the bedrock, a relatively impervious zone containing water primarily in joints, fractures, and faults. On the eastern flank of the Blue Ridge, ingenious and metamorphic rocks are most common; sedimentary rocks are more common on the western flank. Steep terrain and thin soil covering result in rapid surface runoff and low ground water recharge. The lower slopes of the mountains are the most favorable areas for ground water accumulation. Springs are common and are often used for private water supplies. Because the rocks in the Blue Ridge are relatively insoluble, the ground water is not severely mineralized, but iron content is high in some locations."

Refer to **Figure B-2** for locations, as well as **Table B-1** for a summary of geologic units in the Town of Middleburg WHPA.

Ranking of Land Use Activity and Potential Sources of Contamination (Form E)

Subject: LOUDOUN

Water: MIDDLEBURG, TOWN OF PWSID#: 6107450 Source Name: WELL #3

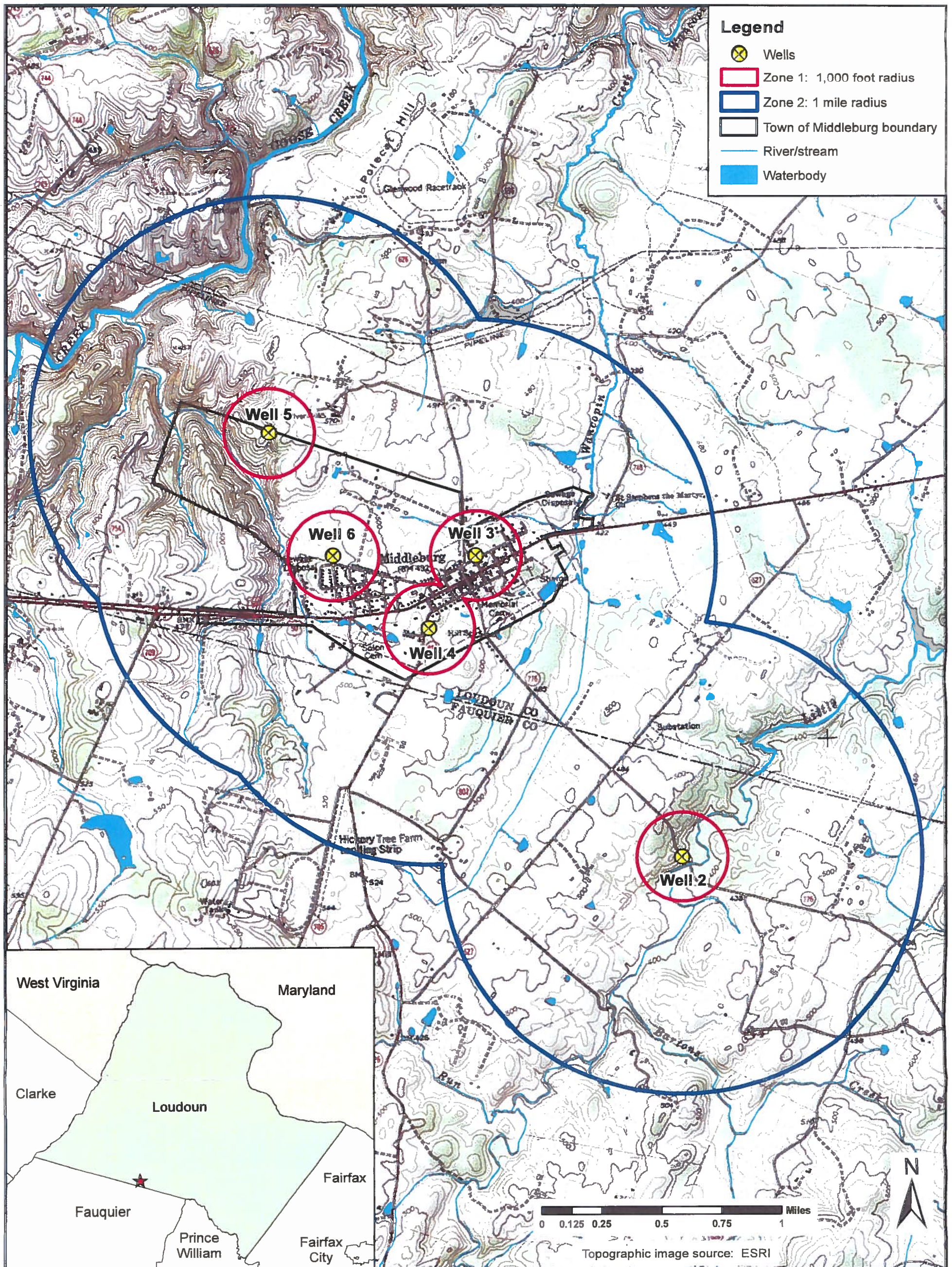
Evaluated by: Donna Chabot Halterman Date: 11/26/01

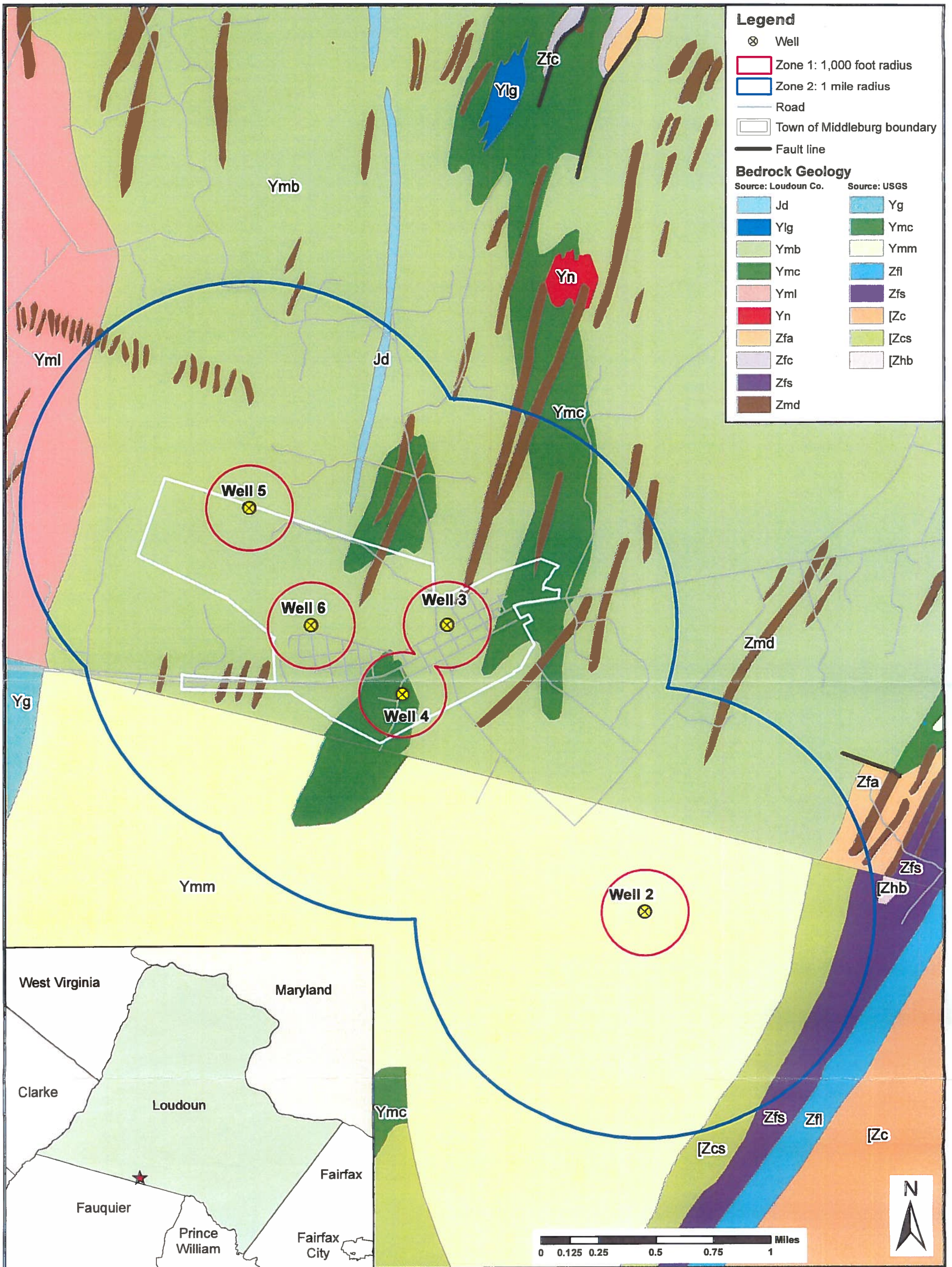
Reviewed by: Hamid R. Golesorkhi

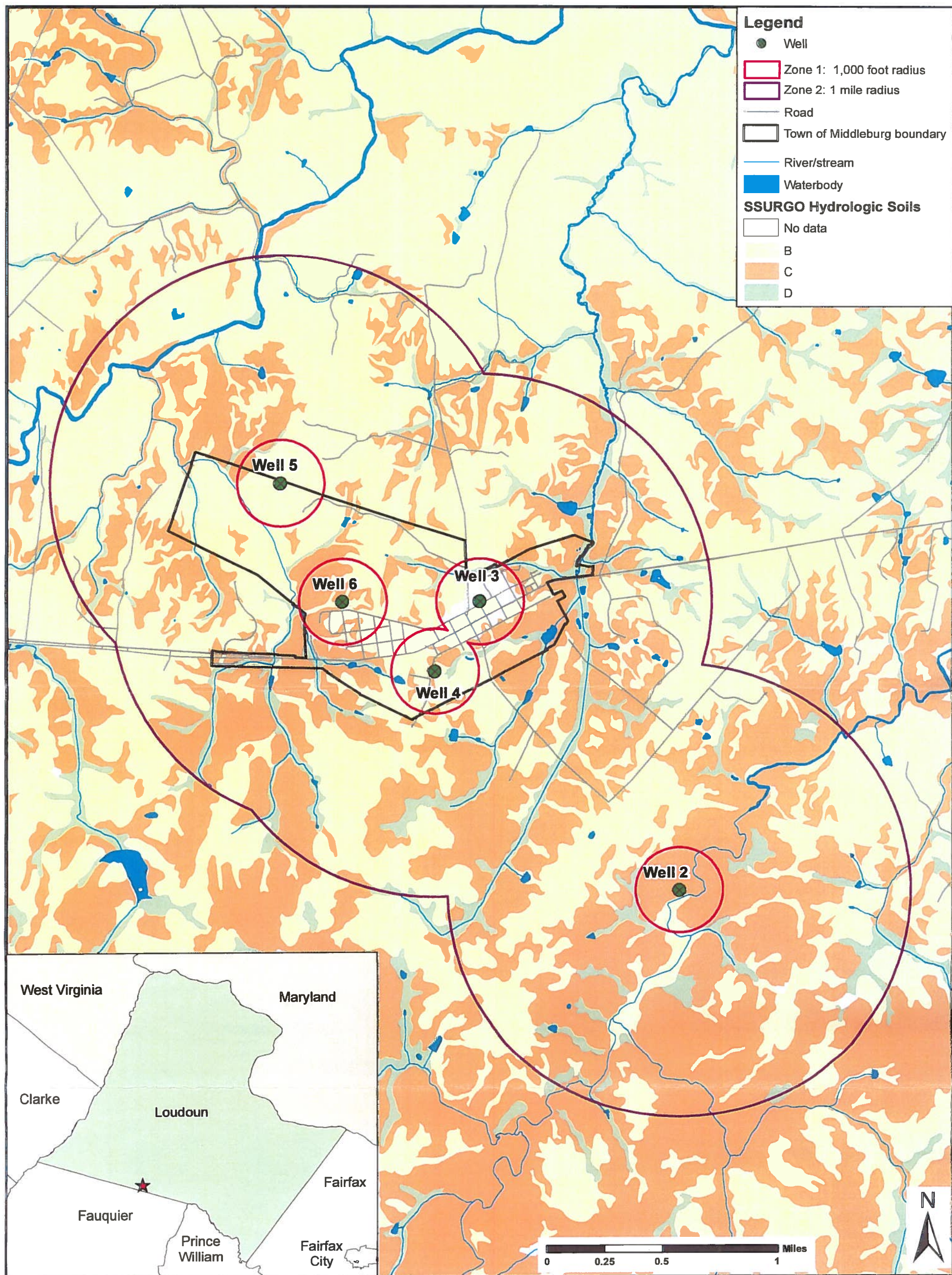
Date: 8/28/02

Map ID #	Unique ID	Risk Type	Classification of Contaminant Source	Comments	Verified*	Property Owner	Mailing Address (Street or POB, Town)
L-8	3816	Medium	Gasoline Station/Service Center	Gasoline Station		Exxon	PO Box 53, Houston TX 77011
P-1	5849732	Medium	Offset & letterpress printing & computer typesetting			Middleburg Printers	PO Box 1121 Middleburg VA 20118
P-3	5852108	Medium	Magazine publishing			Nova Scope Inc	200 W Washington St Middleburg VA 20117
P-4	8228551	Medium	Custom millwork, wood cabinets & furniture			Middleburg Millwork Inc	106 S Madison St Middleburg VA 20117-0407
L-6	3814	Low	Parking Lots			Royston Funeral Home	PO Box 163, Middleburg VA 20118
L-3	3811	Low	Parking Lots			Red Fox Inc	PO Box 385, Middleburg VA 20118
L-4	3812	Low	Parking Lots			County of Loudoun	PO Box 7000, Leesburg VA 20177
L-7	3815	Low	Funeral Home/Mortuary	Funeral Home		Royston Funeral Home	PO Box 163, Middleburg VA 20118
L-5	3813	Low	Parking Lots			Red Fox Inc	PO Box 385, Middleburg VA 20118
L-1	3809	Low	Parking Lots			Safeway	5918 Stoneridge Mall Rd
L-2	3810	Low	Parking Lots			Safeway	Pleasanton CA 94588-3229
P-2	VA0024775	Low	Discharge -- No Discharge Facilities			Middleburg WWTP	P.O. Box 187 Middleburg VA 22117

*Verified -- Date evaluator has determined that contaminant(s) are used or stored at the site.







Legend

- Well
- Zone 1: 1,000 foot radius
- Zone 2: 1 mile radius
- Road
- Town of Middleburg boundary
- River/stream
- Waterbody

SSURGO Hydrologic Soils

- No data
- B
- C
- D



Town of Middleburg
PWSID: 6107450
Source Water Protection Plan

Figure B-3
Soils Hydrologic Unit Map

CREATED BY: SMB DATE: 01/04/2013

Appendix C:

Potential Sources of Contamination

Table C-1 provides specific site information and **Figure C-1** presents a map of the PSC locations identified in a field investigation. Please note that the locations of wells and intakes are not displayed on figures due to security reasons.

Table C-1: Potential Contaminant Sources Occurring in or Near the Source Water Protection Area for the Town of Middleburg

PSC No.	Classification of PSC	Site Name	Comments/Description
P-1	Conduit	Well 2	Middleburg Well
P-2	Conduit	Private Water Well	2138 Landmark School Road
P-3	On-site sewage system	Septic System	2138 Landmark School Road
P-4	Conduit	Private Water Well	2130 Landmark School Road. There is also a neighbor across the road with private well and septic system.
P-5	On-site sewage system	Septic System	2130 Landmark School Road. There is also a neighbor across the road with private well and septic system.
P-6	Conduit	Well 3 and tank	
P-7	Conduit	Well 4	
P-8	Conduit	Private Well	At a barn, looks like a 6 inch well
P-9	Conduit	Well Q	At Salamander Resort
P-10	Conduit	Well L, or Well 5	Remote and in use for the Middleburg water system.
P-11	Conduit	unused well	At the Salamander Resort property, small diameter
P-12	Conduit	unused well	Point taken near an unused water well that was suspected to interfere with yields at Well 3, so not developed.
P-13	Conduit	Well P, or Well 6	Located beside the water treatment plant with generator
L-1	Fire training, garage for trucks	fire department	Four bays
P-14	Conduit	unused well	Well on mayor's property
L-2	Historic Gas Station Site	Historic Gas Station	Was a BP that closed in the 1990s. Tanks were removed.
L-3	Fertilizer Distributor	Southern States	Hardware and fertilizer store
L-4	Fuel Storage System	Fuel Oil tank	There had been a leak in the basement where the fuel oil tank is kept. The responders contacted the water system and the oil was well contained.
L-5	Wastewater Pump Station	Sewage Lift Station	Privately operated
L-6	Wastewater Pump Station	Pump station	Operated by the town
L-7	Wastewater Pump Station	Pump station	Privately operated

PSC No.	Classification of PSC	Site Name	Comments/Description
L-8	Wastewater Pump Station	Pump station	Privately operated
L-9	Millworks and Hardware Store	Mill works	Not a sawmill or treatment facility. Makes windows, doors, stairs. Sell building supplies.
L-10	Wastewater Pump Station	Pump station	Privately operated
L-11	Gas Station/Service Center	Exxon Station/Garage	Appears that several cars are stored at site. There may have been monitoring wells at this site in the past for groundwater remediation.
L-12	Historic Gas Station Site	Near Historic Gas Station site	Now the building has been turned into a boutique.
L-13	Dry Cleaning	Middleburg Cleaners	This is a dry cleaning services, but they send clothes away, no dry cleaning at site.
L-14	Above Ground Storage Tanks	The Ultimate Service	Garage appears to be closed but has above ground storage tank on site.
P-15	Conduit	Well 1	Has a garage with 3 bays. Located adjacent to site of historic dry cleaning business.
L-15	Cemetery	Cemetery	It is likely that there are no actual printing presses.
L-16	Printers	Middleburg Printers	
L-17	Wastewater Treatment Plant	Middleburg Wastewater Treatment Plant	
L-18	Funeral Home	Royston Funeral Home	
L-19	Vineyard		Outside of town limits. Identified as an area of concern.

Note: PSC No. labeled with "P" indicated that the site is a specific point, possibly a well or outlet. "L" indicates a threatening land use or facility.

In addition to PSCs identified through interviews and field inventories, a list of regulated sites is provided in **Table C-2 and C-3** and depicted on **Figure C-2 and C-5**. The protection team may choose to verify this list and initiate protective strategies to address confirmed threats to the source water. Sites listed may represent expired permit data. For existing facilities of concern, determine if there is an active permit. In addition determine whether the owners/operators are complying with the permit, including developing and adhering to Groundwater Protection Plans when applicable.

Table C-2: Federal and State Regulated Sites Occurring in or Near the Source Water Protection Area for the Town of Middleburg

Map ID	Regulation Type*	Permit No.	Site Description	Comments
R-1	VPDES	VAG406470	Allen Fred Residence	Single-family home
R-2	VPDES	VA0024775	Middleburg Wastewater Treatment Plant	Municipal
R-3	VPDES	VAN010120	Middleburg Wastewater Treatment Plant	Nutrient
R-4	VPDES	VAG406018	Foster Keith and Pamela Residence	Single-family home

Map ID	Regulation Type*	Permit No.	Site Description	Comments
R-5	RCRA	VAD981039860	Fauquier Laundry	Dry cleaning and laundry services
R-6	RCRA	VAR000013144	Middleburg Elementary	
R-7	RCRA	VAD988195079	Middleburg Exxon	Gasoline stations with convenience stores
R-8	RCRA	VAD988215323	VPI & SU Middleburg Area	Other general government support

Note:

"R" in the Map ID indicates that these data were obtained from state and federal regulatory databases.

RCRA: This database has records for all hazardous waste, generators, and transporters as defined by the Resource Conservation Recovery Act (RCRA). Hazardous waste as defined by RCRA is waste material that exhibits ignitability, corrosivity, reactivity, or toxicity. Hazardous waste comes in many shapes and forms. Chemical, metal, and furniture manufacturing are some examples of processes that create hazardous waste. RCRA tightly regulates all hazardous waste from "cradle to grave" (i.e., from manufacture to disposal).

NPDES: The National Pollutant Discharge Elimination System (NPDES) database identifies facilities permitted for the operation of point source discharges to surface waters in accordance with the requirements of Section 402 of the Federal Water Pollution Control Act. Point sources are discrete conveyances such as pipes or man-made ditches. Industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters. The NPDES permit program controls water pollution by regulating point sources that discharge pollutants into public waters. In the Commonwealth of Virginia, DEQ administers the program as the Virginia Pollutant Discharge Elimination System (VPDES). Though DEQ requires VPDES permits for all point source discharges to surface waters, the US Environmental Protection Agency (EPA) maintains authority to review applications and permits for "major" dischargers, a distinction based on discharge quantity and content.

Table C-3 provides data relative to petroleum and has been included because the threat levels for petroleum facilities and known releases are high to groundwater systems. The types of data are "PR" indicating Petroleum Release and "PF" indicating Petroleum Facility, where petroleum is stored. Petroleum Releases are classified in the state database as having a closed or open status. An open status more than likely indicates that the investigation for the release or spill is ongoing. The Local Advisory Committee may follow up with the land owners or the VDEQ to identify if the open or closed status Petroleum Releases have been mitigated.

Petroleum Releases have not necessarily occurred at all Petroleum Facilities, but the potential remains for an accidental spill. The Local Advisory Committee may communicate with the facility owners to insure that they are aware of spill response procedures.

Table C-3: Petroleum Release and Facility Data for the Middleburg Wellhead Protection Areas.

Map ID	Type	ID Number	Name	Comment
R-9	PR	20003121	Virginia Tech Mare Center	Closed Status
R-10	PR	20023249	The Hill School - Edwards Residence	Closed Status
R-11	PR	19973085	McSwain Residence - The Hill School	Closed Status

Map ID	Type	ID Number	Name	Comment
R-12	PR	20113094	Evans Edna R Residence	Closed Status
R-13	PR	19954045	Blackwood Apartments	Closed Status
R-14	PR	19973012	Middleburg Video	Closed Status
R-15	PR	19993291	Washington Francis Residence	Closed Status
R-16	PR	19993335	Middleburg Volunteer Fire Department	Closed Status
R-17	PR	19993294	Middleburg BP former	Closed Status
R-18	PR	20003247	USPS - Middleburg Main Post Office	Closed Status
R-19	PR	19911070	Southern States	Closed Status
R-20	PR	20033097	Heritage Building	Closed Status
R-21	PR	19920292	Piedmont Enterprises Incorporated	Closed Status
R-22	PR	19993040	Piedmont Enterprises	Closed Status
R-23	PR	19911970	Piedmont Petroleum	Closed Status
R-24	PR	19920077	Piedmont Petroleum	Closed Status
R-25	PR	20113252	Kesler Richard W Residence	Closed Status
R-26	PR	20063070	Heritage Building	Closed Status
R-27	PR	20023035	Middleburg Plaza	Closed Status
R-28	PR	20013178	George Cindi Residence	Closed Status
R-29	PR	20063066	Courtyard at Middleburg LLC Property	Closed Status
R-30	PR	19941749	Shaggy Ram	Closed Status
R-31	PR	19993111	Windy Hill Pump Station	Closed Status
R-32	PR	20083259	Luck House Limited Liability Corporation Property	Closed Status
R-33	PR	19973188	Exxon 24202	Closed Status
R-34	PR	20103159	Exxon Station 24202	Open Status
R-35	PR	20093126	Baltimore Stanley and Isabelle Residence	Open Status
R-36	PR	19932040	Schall Gerald Residence	Closed Status
R-37	PR	19993110	Middleburg Sewer Treatment Plant	Closed Status
R-38	PF	3024437	VPI&SU - Middleburg Ag Research & Ext Station	No Release
R-39	PF	3004703	MIDDLEBURG MILLWORK INC	No Release
R-40	PF	3012628	Morgan Oil Filling Station	No Release
R-41	PF	3025204	PIEDMONT PETROLEUM	No Release
R-42	PF	3003475	NORTHERN VIRGINIA GAS COMPANY, INC	No Release
R-43	PF	3038153	Estate of Susan Pettibone	No Release
R-44	PF	3004391	TOWN OF MIDDLEBURG	No Release
R-45	PF	3010749	C&P TELEPHONE	No Release
R-46	PF	3009880	Middleburg Exxon	No Release
R-47	PF	3026866	MR SCHALL	No Release
R-48	PF	3020300	McKinney Robert M Property	No Release

Note:

"R" in the Map ID indicates that these data were obtained from state and federal regulatory databases.

PR and PF: Petroleum Release and Petroleum Facility data were obtained from the Virginia Environmental Geographic Information Systems (VEGIS) permits. The datasets are DEQ produced data. NOTE: The environmental data contained within the below files are intended for REFERENCE ONLY and is NOT certified to be absolutely complete or correct.

Local data were obtained from the Loudoun County Geologic Information System providing locations for wells and pollutant sources. **Table C-4** and **C-5** lists the wells and pollutant sources and provides specific parcel numbers. **Figure C-3** and **C-5** provide site locations.

Table C-4: Water Wells data from Loudoun County GIS.

Map ID	Plat number	Subdivision name	ID	Well type	Well zone
1	(NA)	TOWN OF MIDDLEBURG	WWWCO-1955-0079	CW	1 mi
2	(NA)	TOWN OF MIDDLEBURG	WWWCO-1986-0472	CW	1000 ft
3	1999-0140	CLARK FOUNDATION SUBDIVISION	WWWCO-1994-0220	CW	1000 ft
4	2011-0172	(NA)	WWWCO-2003-0153	CW	1 mi
5	2011-0172	(NA)	WWWCO-2003-0154	CW	1 mi
6	2011-0172	(NA)	WWWCO-2003-0155	CW	1 mi
7	2011-0172	(NA)	WWWCO-2003-0156	CW*	1 mi
8	2011-0172	(NA)	WWWCO-2003-0256	CW	1000 ft
9	2011-0172	(NA)	WWWCO-2003-0258	CW	1000 ft
10	2011-0172	(NA)	WWWCO-2003-0259	CW	1 mi
11	2011-0172	(NA)	WWWCO-2003-0431	CW	1000 ft
12	2011-0172	(NA)	WWWCO-2003-0432	CW	1000 ft
13	2011-0172	(NA)	WWWCO-2003-0433	CW	1000 ft
14	2011-0172	(NA)	WWWDH-2003-0436	DW	1 mi
15	2001-0677	(NA)	WWWIN-1959-0124	IW	1 mi
16	2001-0677	(NA)	WWWIN-1959-0125	IW	1 mi
17	(NA)	(NA)	WWWIN-1960-0146	IW	1 mi
18	(NA)	ORIGINAL TOWN PLAT OF MIDDLEBU	WWWIN-1968-0123	IW	1000 ft
19	2003-0017	VIGINIA LANE SUBDIVISION	WWWIN-1968-0129	IW	1 mi
20	(NA)	TOWN OF MIDDLEBURG	WWWIN-1977-0248	IW	1000 ft
21	(NA)	TOWN OF MIDDLEBURG	WWWIN-1977-0249	IW	1000 ft
22	1995-0268	TOWN OF MIDDLEBURG	WWWIN-1977-0263	IW	1 mi
23	(NA)	(NA)	WWWIN-1984-0210	IW	1 mi
24	2003-0443	(NA)	WWWIN-1991-0031	IW	1 mi
25	1994-0077	(NA)	WWWIN-1997-0379	IW	1000 ft
26	2000-0274	OHIRSTROM DIVISION	WWWIN-1999-0448	IW	1000 ft
27	(NA)	(NA)	WWWIN-2008-0003	IW	1 mi
28	2011-0172	(NA)	WWWMN-2003-0257	MW	1 mi
29	2011-0172	(NA)	WWWMN-2003-0434	MW	1 mi
30	2011-0172	(NA)	WWWMN-2003-0435	MW	1 mi
31	(NA)	TOWN OF MIDDLEBURG	WWWNC-1980-0289	NCW	1 mi

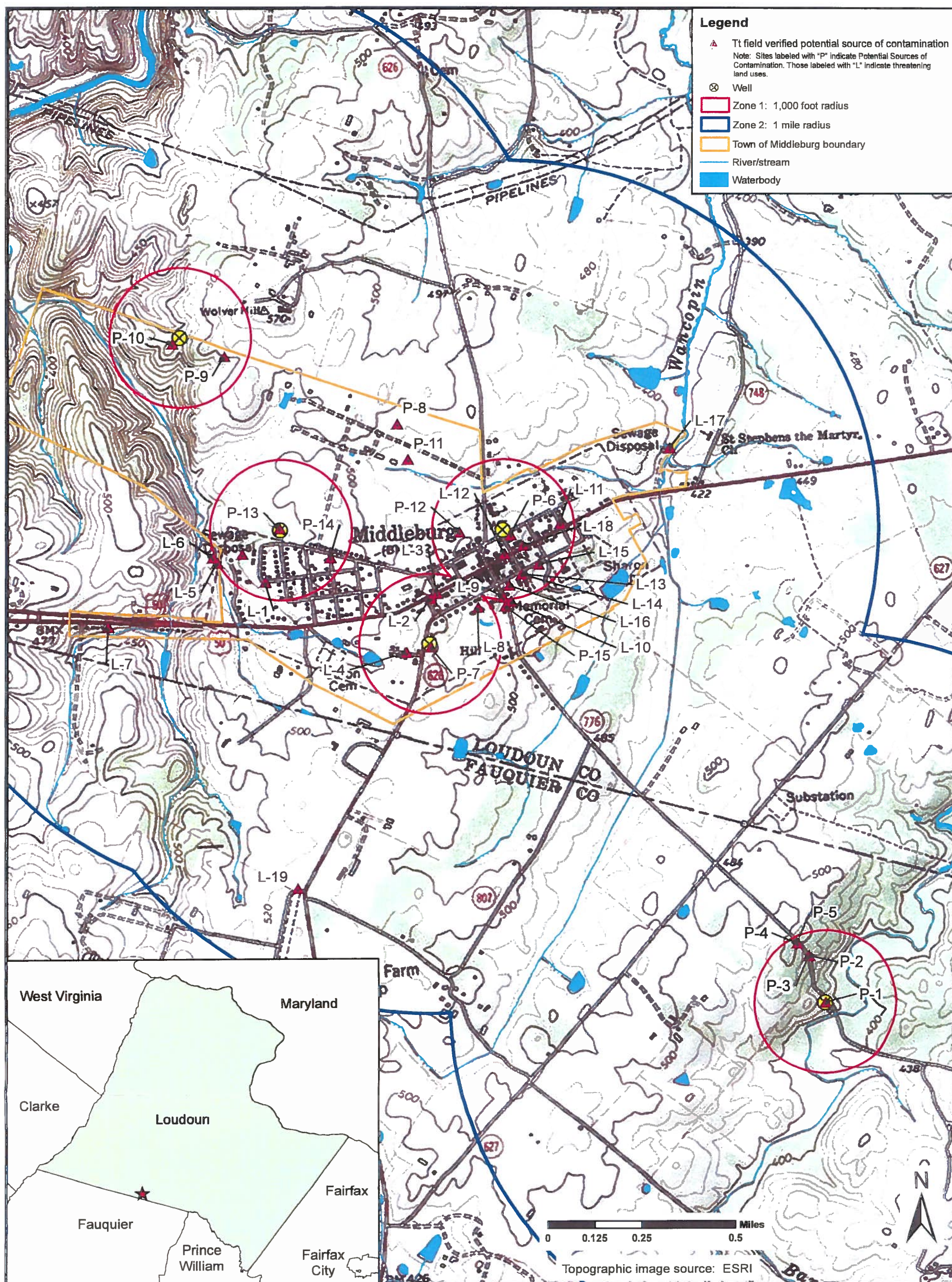
Note: NA for Plat Number indicates that the location of the point was either between parcels, such as in roadways or in parcels with no plat number assigned. These points should be verified.

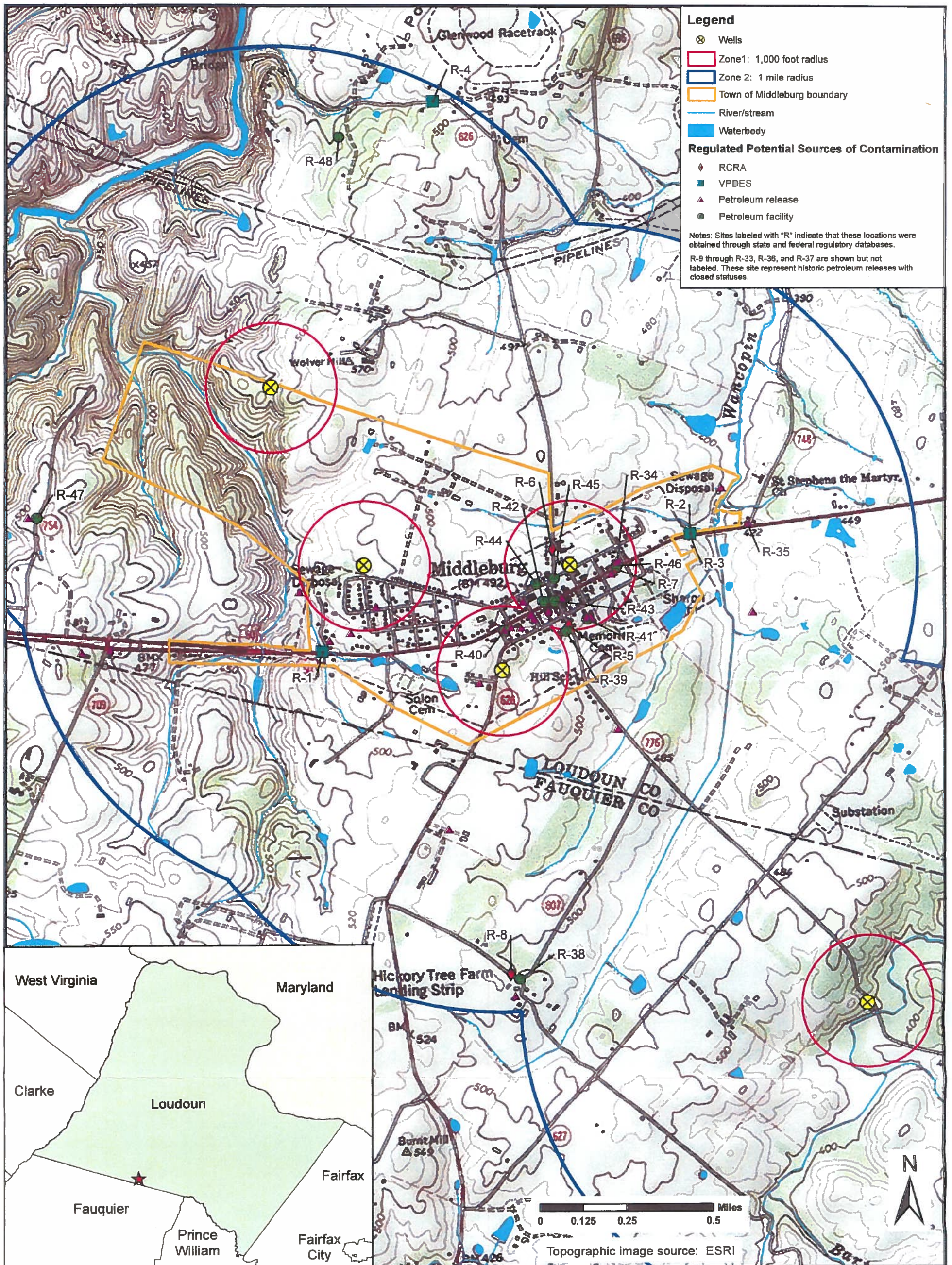
*CW= Community Well, DW= Dry Well, IW= Individual Well, MW= Monitoring Well, NCW=non-community well.

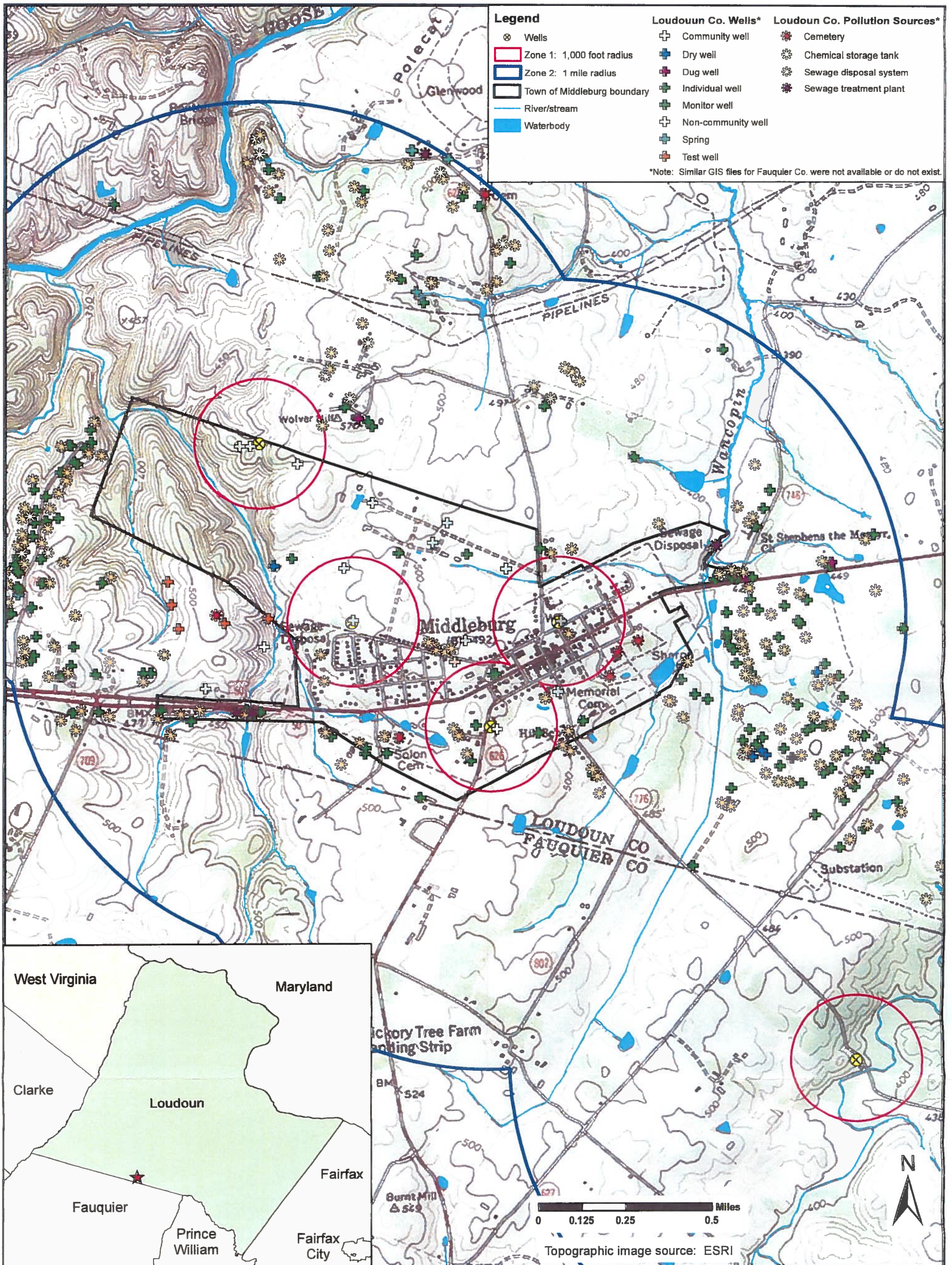
Table C-5: Pollutant Source data from Loudoun County GIS

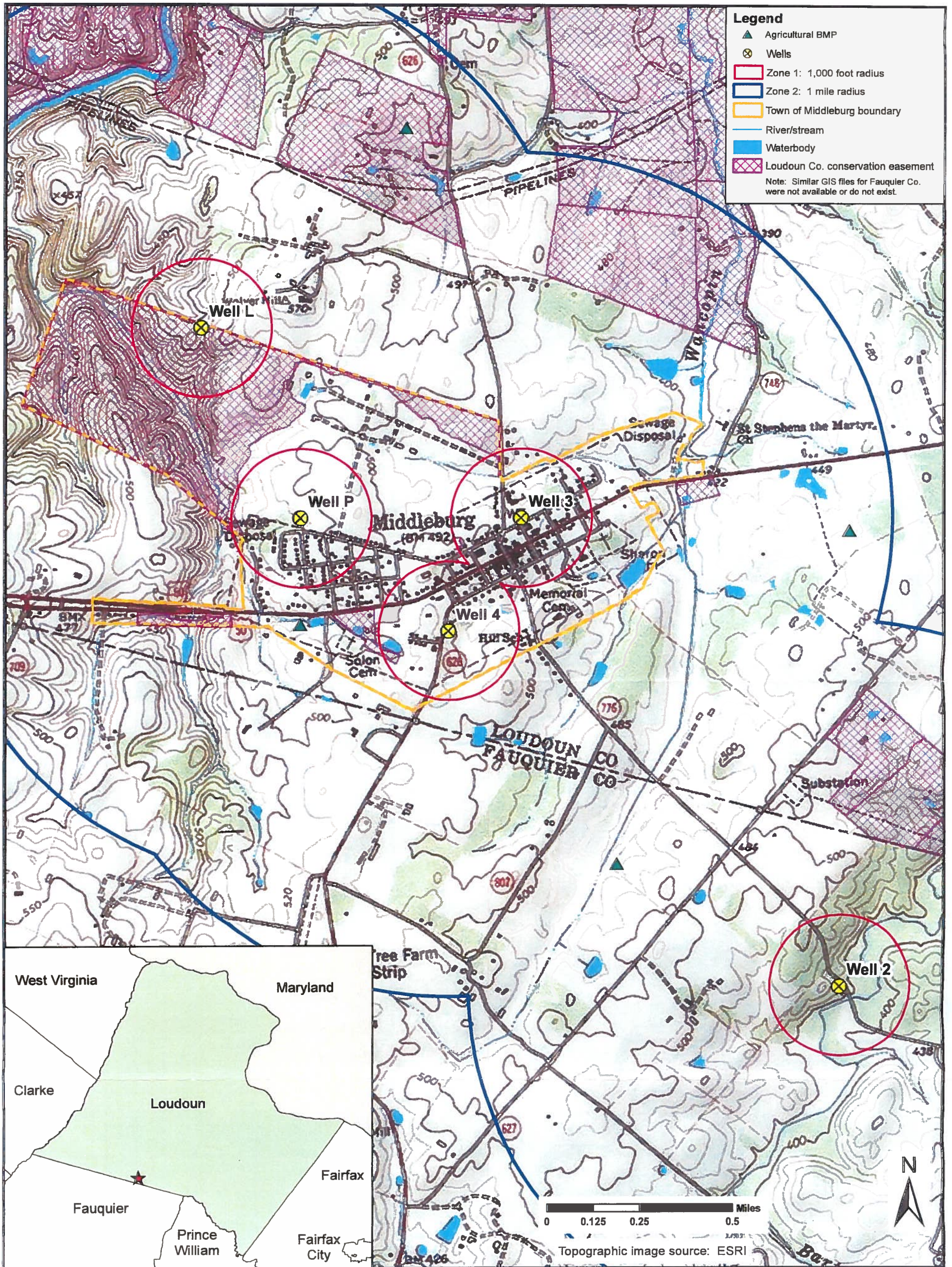
Map ID	Plat number	Subdivision name	ID	Point type	Well zone
47	(NA)	ORIGINAL TOWN PLAT OF MIDDLEBU	PSSD-1968-0160	Sewage disposal system	1000 ft
41	1994-0077	(NA)	PSSD-1964-0225	Sewage disposal system	1 mi
40	(NA)	(NA)	PSSD-1960-0185	Sewage disposal system	1 mi
35	(NA)	ORIGINAL TOWN PLAT OF MIDDLEBU	PCEM-1998-0171	Cemetery	1 mi
39	(NA)	TOWN OF MIDDLEBURG	PSSD-1956-0130	Sewage disposal system	1000 ft
37	1994-0077	(NA)	PSSD-1950-0039	Sewage disposal system	1 mi
50	1995-0268	TOWN OF MIDDLEBURG	PSSD-1977-0250	Sewage disposal system	1 mi
38	(NA)	ORIGINAL TOWN PLAT OF MIDDLEBU	PSSD-1956-0129	Sewage disposal system	1000 ft
53	2011-0247	FRED FRANCIS ALLEN SUBDIVISION	PSSD-1984-0209	Sewage disposal system	1 mi
56	2001-0677	(NA)	PSTP-1959-0169	Sewage treatment plant	1 mi
49	2003-0017	VIGINIA LANE SUBDIVISION	PSSD-1968-0170	Sewage disposal system	1 mi
58	2011-0247	FRED FRANCIS ALLEN SUBDIVISION	PSTP-1984-0228	Sewage treatment plant	1 mi
48	2004-0212	VIGINIA LANE SUBDIVISION	PSSD-1968-0169	Sewage disposal system	1 mi
52	(NA)	TOWN OF MIDDLEBURG	PSSD-1979-0244	Sewage disposal system	1000 ft
32	(NA)	TOWN OF MIDDLEBURG	PCEM-1998-0102	Cemetery	1 mi
36	2005-0128	WINDY HILL SUBDIVISION	PSSD-1948-0027	Sewage disposal system	1 mi
33	(NA)	TOWN OF MIDDLEBURG	PCEM-1998-0124	Cemetery	1 mi
44	(NA)	FOX HILLS SUBDIVISION	PSSD-1965-0221	Sewage disposal system	1 mi
50	(NA)	MIDDLEBURG BLDG CO SUBDIVISION	PSSD-1978-0228	Sewage disposal system	1000 ft
45	(NA)	FOX HILLS SUBDIVISION	PSSD-1966-0210	Sewage disposal system	1 mi
46	(NA)	FOX HILLS SUBDIVISION	PSSD-1966-0211	Sewage disposal system	1 mi
34	(NA)	TOWN OF MIDDLEBURG	PCEM-1998-0164	Cemetery	1 mi
43	(NA)	FOX HILLS SUBDIVISION	PSSD-1965-0220	Sewage disposal system	1 mi
42	(NA)	FOX HILLS SUBDIVISION	PSSD-1965-0219	Sewage disposal system	1 mi
54	(NA)	TOWN OF MIDDLEBURG	PSSD-1987-0419	Sewage disposal system	1000 ft
55	2003-0443	(NA)	PSSD-1991-0037	Sewage disposal system	1 mi
57	1992-0075	(NA)	PSTP-1961-0158	Sewage treatment plant	1 mi

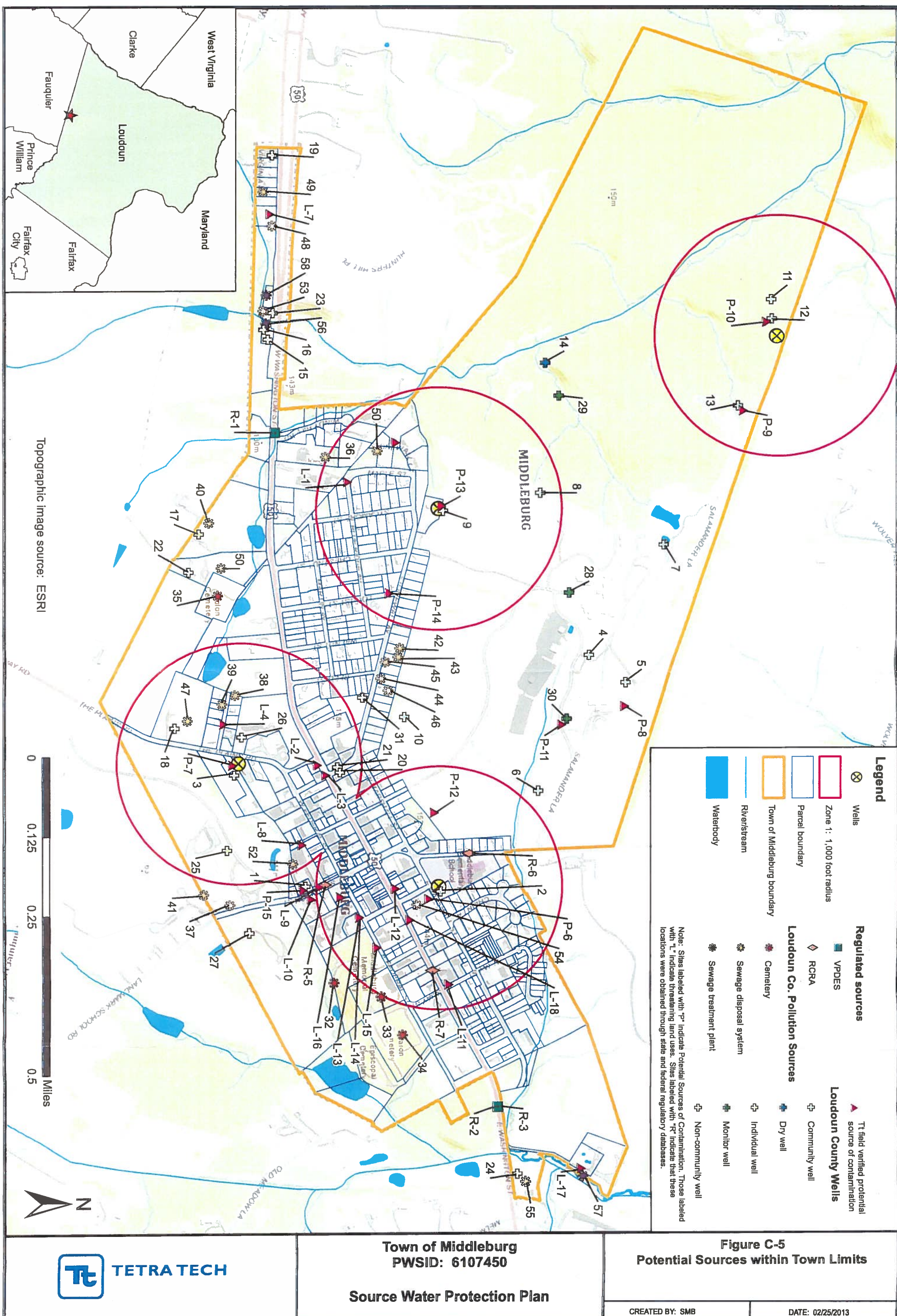
Note: NA for Plat Number indicates that the location of the point was either between parcels, such as in roadways or in parcels with no plat number assigned. These points should be verified.





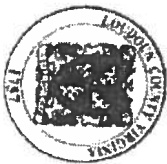






Appendix D:

Guidance Materials



Proper Well Abandonment Procedures

A. Drilled wells with current GW-2 (driller's report)

1. Casing may be salvaged when possible.
2. The well must be checked to assure it is free from obstructions prior to plugging.
3. The well must be thoroughly disinfected prior to plugging.
4. When the casing is salvaged (removed), the well may be back filled to 20 feet below bedrock, with clean sand, gravel, or well cuttings.
5. When the casing cannot be removed, the well may be back filled to 20 feet below bedrock or 20 feet below the bottom of the casing, whichever is greater.
6. In each scenario the remainder of the well must be pressure grouted with neat cement (portland & water) or a bentonite slurry

B. Drilled wells without current GW-2 (driller's report)

1. Casing may be salvaged when possible.
2. The well must be checked to assure it is free from obstructions prior to plugging.
3. The well must be thoroughly disinfected prior to plugging.
4. The well shall be pressure grouted with neat cement or a bentonite slurry from the bottom to the top. The grout pipe may be terminated at 100 feet.

C. Hand dug wells and bored wells

1. The well must be checked to assure it is free from obstructions prior to plugging.
2. The well must be thoroughly disinfected prior to plugging.
3. The well shall be concreted or pressure grouted with a neat cement from the bottom to the top. For wells with diameters greater than 2 feet, a concrete mix may be poured into the well until it is filled (continuous pour required).
4. A permanent marker located in the center of the abandoned well and at ground level must indicate the type of well and date abandoned.
5. If the abandonment method stated in section 12VAC 5-630-450 of the Private Well Regulations is used, then all distance requirements set in table 3.1 of the Private Well Regulations are to be followed.

D. Wells constructed in unconsolidated formation

1. The well must be checked to assure it is free from obstructions prior to plugging.
2. The well must be thoroughly disinfected prior to plugging.
3. The well shall be pressure grouted with neat cement or a bentonite slurry from the bottom to the top.
4. A permanent marker located in the center of the abandoned well and at ground level must indicate the type of well and date abandoned.

E. A 25 foot setback distance from any part of a sewage disposal system or future systems is required for all wells properly abandoned in the manner previously stated.

Example Language* provided by the Virginia Ground Water Protection Steering Committee (1998)

***Note: This sample language may include uses that are not allowed within the Town of Middleburg; therefore, a comparison with the Middleburg Zoning Ordinance is necessary prior to the submission of any zoning ordinance amendments.**

Wellhead Protection Overlay Districts for Local Zoning.

a) Purpose: Wellhead Protection Overlay District

The purpose of the Wellhead Protection (WHP) Overlay District is to prevent contamination of wells, wellfields, and other ground water resources that are used as elements of public water systems and that serve as sources of public drinking water for residences, businesses, schools, and sites open to the general public. These regulations promote the health, safety, and general welfare of the community by protecting the public and its drinking water from potential contamination of the ground water by nearby land uses and activities. These provisions are consistent with the 1996 Amendments to the Safe Drinking Water Act and programs of the Commonwealth of Virginia.

b) Definition Public water system is a system for the provision of water for human consumption through pipes or other constructed conveyances if such system has at least fifteen service connections or regularly serves at least twenty-five individuals.

c) Zoning Map The governing body of (town, city, county) hereby establishes and delineates on the Official Zoning Maps the Wellhead Protection Overlay District, to be referred to on the Official Zoning Maps by the symbol WHP. Unless otherwise shown, the area delineated on the Official Zoning Maps consists of all lands within one thousand (1000) feet of each public water supply well. This initial area may be amended by the governing body if new information allows the community to better achieve the purposes of this ordinance.

d) Existing Uses & Structures The use provisions of this article shall apply to structures constructed and land uses established after(date). Pre-existing uses that are no longer permitted may be continued but not expanded.

The performance standards and guideline provisions of this article shall apply when additional development of a parcel is proposed. Performance standards and guidelines will at that time be applied to both existing and proposed development.

The following model text assumes a single tier 1000 foot protection area.

e) Permitted Uses. The uses permitted in the Wellhead Protection Overlay District shall be the same as those permitted in the underlying zoning district except as specified below.

The following use types and uses shall be prohibited within the Wellhead Protection Overlay District:

- (1) Airports
- (2) Asphalt mixing plants
- (3) Automobile repair services, major
- (4) Automobile repair services, minor
- (5) Central sewerage systems serving three or more connections discharging to drainfields
- (6) Chemical, plastics, fertilizer, pesticide manufacture, processing or bulk storage
- (7) Commercial feedlots, unless exempted under Virginia Code Section 15.2-2288
- (8) Contractor's equipment storage and maintenance facilities
- (9) Dry cleaning plants

- (10) Gasoline service stations
- (11) Golf courses
- (12) Inoperative motor vehicles or inoperative motorized equipment
- (13) Land application of industrial wastes
- (14) Landfill, Construction Debris
- (15) Landfill, Sanitary
- (16) Outdoor, uncovered stockpiling of road salt or other deicing chemicals
- (17) Petroleum, gasoline, or gas bulk storage or distribution
- (18) Resource extraction
- (19) Scrap and salvage yards or services
- (20) Slaughterhouses
- (21) Towing and storage of motor vehicles
- (22) Underground storage of any chemical or petroleum products

f) Special Exceptions The following use types and uses shall be prohibited unless allowed by a special use permit approved by the governing body.

- (1) warehousing
- (2) (to be filled in)
- (3) (to be filled in)

g) Performance Standards. Uses of the land and structures located in the Wellhead Protection Overlay District shall comply with the following mandatory standards.

1) Waste Water Management

a) In areas served by public sanitary sewers, all uses and structures shall connect to that system.

b) In areas not served by public sanitary sewers, only domestic, employee and occupant waste water systems may be discharged into the ground. Floor drains, sump pumps and similar devices may not be connected to systems discharging waste water to the ground.

2) Potential Contaminant Management

The following is applicable to uses involving the storage, handling, and manufacture or use of more than (fill in) pounds or (fill in) gallons of contaminants listed on the Maximum Contaminant List (MCL) under the Safe Drinking Water Act.

a) Storage containers shall be labeled and allow for visual inspection.

b) Storage containers for these substances shall be designed to protect against spillage and release during filling, mixing, withdrawal or use.

c) Storage containers for these substances shall be maintained, repaired and/or replaced so as to be kept in good working order for the prevention of leaks, spills or escapes.

d) Storage containers no longer in use shall be emptied, closed and properly disposed.

3) Abandoned Wells

a) Wells no longer in use shall be identified and permanently abandoned in compliance with Virginia Department of Health standards.

b) Site Plan Review: All development applications in the WHP Overlay District shall be subject to site plan review.

h) Guidelines. Users of the land and structures located in the Wellhead Protection Overlay District shall satisfy the Zoning Administrator that they have addressed the following advisory guidelines to the extent practical and in keeping with other site development objectives of the community.

1) Siting

a) Structures, including storm water management facilities, and associated activities should be located as far as possible from all public water supply wells.

b) Structures and associated activities, including storm water management facilities should be located down gradient from all public water supply wells.

2) Landscaping and Grading

- a) Landscaping should minimize the use of plant materials requiring irrigation, heavy fertilization or use of pesticides.
- b) Impervious surface, unless part of a containment system should be minimized so as not to impede infiltration and ground water recharge.
- c) Grading should minimize slopes and contours which impede infiltration and ground water recharge.

i) Plat and Plan Review to Protect Ground Water Sources

1) Information to be Included With Plat or Site Plan Applications:

- a) A vicinity sketch map showing the location of any public water supply wells and/or any land zoned for wellhead protection within one mile (or other locally determined distance) of the proposed subdivision or other development;
- b) A map showing all parcels of land proposed to be utilized for public water supply wells and a statement indicating whether these parcels are intended to be dedicated, reserved for public use or reserved for use by the property owners;
- c) If ground water is to serve as the source of a public water supply, a contingency plan addressing potential contamination sources within one thousand (or other locally determined distance) feet of the well site(s), mitigation measures either in place or proposed, and a plan for an alternate source of water if the proposed source were to fail, and;
- d) If a subsurface sewage disposal system or systems are proposed, a letter approved by the health department regarding the suitability of such a method of disposal in this location. (Comment: the Health Department can be made a part of the plan review committee.)

2) Review and Approval of Plats or Site Plans:

- a) If a proposed subdivision or development includes a lot or lots designated for public water supply, these shall be within a Wellhead Protection Overlay District.
- b) A notation that land has been zoned to a Wellhead Protection Overlay District designation and noting the lot or lots serving as the location of the public water supply shall be recorded as part of any Final Plat or Development Plan.
- c) Purchasers of land shall be provided such brochures and information pamphlets addressing Wellhead Protection as the (town, city, county of) shall develop and provide to the subdiviver or developer.

Model Language for Septic System Inspection and Maintenance*

***Note: The Wellhead Protection Advisory Committee is recommending that systems be maintained at all times; and, that they be pumped at least once every three years.**

a) Maintenance and Repair of Septic Systems

- 1) All septic systems shall be pumped and maintained once every five years*. Such pumping and maintenance shall be performed in a manner approved by the (town, city, county) health department. The owner of a septic system shall, upon having the septic system pumped and maintained, certify in a form approved by the health department that such pumping and maintenance was performed. The pumping and maintenance required by this section must be performed by an individual or entity approved by the health department.
- 2) Every septic system shall be kept in good repair so that the system functions as originally designed.
- 3) If the (town, city, county) administrator, or the official designated by the administration, determines that the owner of a septic system has failed to comply with the requirements of subsection (a) or (b) of this section, they shall notify the owner of such determination by certified mail, return receipt requested, sent to the address listed in the real estate tax records. Such notice shall also notify the owner that they are required to correct the violation. If the violation is not corrected within 30 days after receipt of such notice, the county administrator may correct the violation.

b) Disposition of Septage, etc.

Persons disposing of the sludge and other material removed from septic tanks shall comply with Virginia and local Health Department requirements.

c) Reserve Drainfields

All lots or parcels of land proposed for new development shall have a primary and a secondary sewage disposal site with a capacity at least equal to that of the primary site except in cases where sewer is provided; where sewer is planned and its availability within a reasonable time can be established; where such lot or parcel was recorded prior to the date of this ordinance, and is not sufficient in capacity to accommodate a secondary sewage disposal site as determined by the health department; or when the county health director files a waiver of necessity of the secondary site with the building official.

Capital Improvement Project

Model Check List for Wellhead Protection Projects

The following projects have been considered, evaluated and a determination made that there is or is not a need for a capital improvement expenditure to address each need.

Needed	Not Needed	Activity
		• Conduct studies leading to physical wellhead protection projects
		-well site mapping and data base
		-technical delineation of protection areas
		-develop code sections for wellhead protection
		• Add storage or pump capacity at existing well sites
		• Purchase, drill, equip additional well sites
		• Extend service lines to growth areas (.smart growth.)
		• Provide sewer service instead of septic systems
		• Purchase computers/software for program administration
		• Add administrative office space/equipment
		• Improve ground water protection measures at the following public facilities:
		- vehicle storage/maintenance areas
		- solid waste landfills/collection points
		- seal/close wells no longer needed
		- upgrade storage tanks at all public facilities
		- upgrade/replace septic systems at all public facilities
		•Purchase land for low impact public uses with secondary wellhead protection benefits
		• Remediate lands purchased for redevelopment
		• Purchase additional lands to buffer a wellhead
		• Participate in cost sharing/matching funds projects

The Virginia Department of Health (VDH) loan program, is a potential source of funding for the types of projects described above as well as those related to surface waters serving as sources to public water supplies.

Frequently asked questions

What is the pump-out ordinance?

Multiple jurisdictions in Virginia have enacted ordinances requiring pumping of septic tanks. In Loudoun County, Chapter 1066 of the Loudoun County Codified Ordinance was amended by the Board of Supervisors on October 4, 2011. The text of the ordinance amendment follows:

b) Except as provided herein, for all individual sewage disposal systems not requiring a Virginia Pollutant Discharge Elimination System (VPDES) permit, the owner shall cause a maintenance pump-out of the septic tank of each such system to be performed by a septic tank cleaner licensed by the Loudoun County Health Department at least once every 5 years and shall provide documentation of the subject maintenance at the request of the County. Licensed septic tank cleaners shall report all pump-outs in a manner acceptable to the Loudoun County Health Department on a biweekly basis and shall provide the homeowner with a copy of the information reported. Notwithstanding the foregoing, for Alternative Onsite Sewage Systems (AOSSs), in lieu of the required 5-year pump-out, the owner may submit documentation, certified by an individual who is licensed or certified under Chapter 23 (§ 54-1-2300 et seq.) of Title 54-1 of the Code of Virginia as being qualified to operate, monitor, and maintain an AOSS, that the system has been inspected, is functioning properly, and the tank does not need to be pumped out.

Why do septic tanks need to be pumped out?

Routine tank pump outs are a critical step in helping to prevent premature failure of a system with resultant repair or replacement costs. Septic tanks are designed to trap solids and scum before they enter the rest of the treatment system where they can cause damage. If the tank is not pumped regularly it could lead to poor system performance, backups, reduced system life, well contamination and premature failure.

How will the ordinance be implemented?

The effective date of the ordinance is July 1, 2012. To best meet owners' needs, conventional system owners will be encouraged to have their tanks pumped in groups (20% per year) over the next five years with the goal of having all tanks pumped by July 1, 2017. Gradual implementation will help avoid service delays from overwhelmed pumpers and dump stations. Tanks should be pumped immediately when they are determined to be at capacity rather than waiting for notification. Initial postcards will go out to all owners of conventional onsite septic systems in March, 2012. Reminder postcards will then be sent in groups, starting with the oldest systems first, in order to reduce demands on the septicage handling system.

How does this ordinance impact owners of alternative onsite septic systems?

Alternative systems are currently being visited by an inspector each year; these inspectors will now have the additional responsibility of inspecting the tanks on site and verifying that they do, or do not need to be pumped. Tanks that have not been uncovered in previous inspections must now be uncovered for these inspections. If the

inspector reports that a tank pump-out is needed, the tank should soon be pumped. The inspection option is not available for conventional systems.

Is every 5 years the proper frequency?

The ordinance requires pumping at five years for conventional systems. While the recommended frequency for pumping a specific system depends on the system use and size of the tank, five years was determined to be a reasonable minimum pumping frequency for the average system. Many tanks need to be pumped more frequently than every five years based on usage. If a garbage disposal is used, recommended pumping frequency can increase by 50%.

What does it cost to replace an onsite sewage disposal system?

Replacement costs will vary depending on the type of onsite sewage disposal system. Costs may range from \$7,000 to replace a gravity flow conventional system to \$50,000 or more for an alternative sewage disposal system.

Who do I call to pump my tank?

The company must be operated by an onsite sewage system operator licensed by the Loudoun County Health Department. A list of licensed operators can be found at: <http://va-loudouncounty.civicplus.com/index.aspx?NID=1428>.

How is my tank pump-out tracked?

When your tank is pumped, your operator enters pump-out information into a web based database called OnlineRME™, which notifies the Health Department that your tank has been pumped. Once the pump-out information is received, owners will not be sent additional notices until the system is due to be pumped again, in five years. If the tank is pumped more frequently than five years, the owner may never see a reminder notice.

Are operators required to enter the pump-out data in the OnlineRME™ database?

Yes. If the operator does not report the information in OnlineRME™, owners who have their tank pumped may still not be in compliance with the ordinance.

What will the onsite sewage system operator do when he arrives to pump my tank?

The operator will locate and uncover your tanks if no access exists. The operator will then pump the tank(s). Tanks should be pumped completely with no solids left in the bottom. It is recommended that sanitary tees and the tank itself be inspected for soundness and water tightness; if a tank is leaking, it can cause premature system failure and be a source of groundwater pollution. Filters, if present, should also be cleaned at this time.

I have an alternative system, what am I required to do?

Alternative system owners are already required by Loudoun County Codified Ordinance Chapter 1067 to have their system inspected annually and should not receive pump out reminder cards. The system operator is required to inspect the septic tank(s) during

the annual visit to determine if pumping is needed. If the tank is buried it will have to be uncovered for inspection.

Will uncovering the tank make a mess in my yard?

Unfortunately, some tanks were installed without risers to allow for easy access. In these situations, uncovering a tank, especially if it is deep, can be expensive and leave a mess. Tanks that have a small 6" inspection riser must still be uncovered for pump-out since it is impossible to do an adequate job of pumping a tank through a small opening. Future digging can be avoided by installing an access riser to just below or above the surface. The riser is recommended to go over the inlet since more solids tend to accumulate at the inlet side.

I still have questions or concerns about this ordinance. Who can I contact for more information?

Our goal is to implement this new ordinance in a manner that best meets the needs of homeowners and operators. Please contact the Health Department by phone at 703-777-0234 or by email at health@loudoun.gov if you have any questions or concerns about this ordinance or about any other public health issue in Loudoun County.

Appendix E:

Example Letters

Example Letter to Business for GROUNDWATER

Month/Day/Year

Local Business Owner
Address

Dear Local Business Owner,

This letter is to make you aware that your business, **Business Name**, is located within or near the Source Water Protection Area for our community's drinking water. This protection area was initially developed for Town of Middleburg by the Virginia Department of Health and provided in a source water assessment report. Since that time the protection area has been expanded to include new drinking water sources.

Our source of drinking water is supplied by water that is pumped out of wells. Liquid substances such as automotive products, fuel oil, cleaning fluids, and oil-based paints are common groundwater contaminants. These substances can enter the groundwater through improper disposal methods. Improper disposal methods include pouring chemicals on the ground, down a sink or toilet connected to a septic system, or down a storm drain. Any contamination that enters the groundwater resources will force Town of Middleburg to implement additional costly measures in order to assure the water supplied to local customers is safe to drink.

Town of Middleburg is asking all businesses located within the protection area to follow all regulations as required by state and federal laws for their business, implement best management practices within business operations, report any spills to appropriate officials, and prevent the improper disposal of any liquids that could contaminate the water resources.

Town of Middleburg thanks you for your cooperation and assistance. If you have any questions or would like to review the drinking water source assessment report or protection plan please contact the town office at 540-687-5152.

Sincerely,

Example Letter to Resident for GROUNDWATER

Month/Day/Year

Local Resident

Address:

Dear Local Resident,

This letter is to make you aware that your residence is located within or near the Town of Middleburg Drinking Water Source Protection Area. This protection area was initially developed for Town of Middleburg by the Virginia Department of Health and provided in a source water assessment report. Since that time the protection area has been expanded to include new drinking water sources.

Our source of drinking water is supplied by groundwater that is pumped out of wells. Liquid substances such as automotive products, fuel oil, cleaning fluids, and oil-based paints are common groundwater contaminants. These substances can enter the groundwater through improper disposal methods. Improper disposal methods include pouring chemicals on the ground, down a sink or toilet connected to a septic system, or down storm drains. Any contamination that enters the groundwater resources will force the Town of Middleburg to implement additional costly measures in order to assure the water supplied to local customers is safe to drink.

Town of Middleburg is asking all residents living within the protection area to report any spills to appropriate officials and prevent the improper disposal of any liquids that could contaminate the groundwater resources. In addition, Town of Middleburg is reminding residents of the requirements to inspect and maintain private septic systems.

In addition to improper disposal, contaminants can also enter into the groundwater through private water wells. If you own a private well, please perform maintenance to prevent contaminants, including bacteria, from entering the groundwater source. Please contact Town of Middleburg if you are willing to have your well properly abandoned to protect the system groundwater source. Contact the state or local health department to learn more on how to maintain well and protect your water source.

Town of Middleburg thanks you for your cooperation and assistance. If you have any questions or would like to review the Town of Middleburg source water assessment report or protection plan, please contact at 540-687-5152.

Sincerely,

Appendix F:
Contingency Plans

Drinking Water Shortage - Short Term Loss of Source

TOWN OF MIDDLEBURG/PWSID 6107450

Middleburg has an emergency alert system, the Roam Secure Alert Network, for which residents can register their cell phones, pagers, and emails.

In addition, water users will be notified of a water emergency by:

Word of Mouth

X

Posted Notices

X

Door-to-door canvas

X

Phone number for emergency services:

Service	Name	Emergency Phone #
Police	Middleburg Police Department	911
Fire	Middleburg Volunteer Fire Department	911
Ambulance	Middleburg Volunteer Fire Department	911

Name and phone number of person(s) that the consumer should notify regarding a potential problem so that the operator can assess the potential problem and notify the appropriate parties:

Name	Phone	Alt. Phone #
Martha Mason Semmes, Town Administrator	(540) 687-5152	(571) 209-0523
Loudoun Water	(703) 507-6639	(571) 291-7878

Alternative Sources of Water

Bottle Water Provider	Provided by Loudoun Water
Back Up Source	Five wells in the system, can produce water with one or more off line. All wells and treatment facilities are active and have capacity to increase water production.
Connect to Neighboring Water Works	No available connection
Water Hauling	In the event water must be hauled, the Town has made arrangements to purchase the water from Hughes Supply, a wholesale water supplier (Phone: 304-283-8346). The water will be delivered by Loudoun Truck Center (Phone: 540-338-7156).
Generators	Have generators at treatment for Wells 4-6 and a portable generator for use throughout.

Drinking Water Shortage - Long Term Water Supply Planning

TOWN OF MIDDLEBURG
PWSID 6107450

Future water supply needs may involve expanding a current water source or developing a new one. A community needs to plan for such major expenditures, and may need to acquire options on or secure relatively undeveloped land many years in advance. Completing the following will help determine how soon this may occur.

Town of Middleburg currently provides water at 35% of pumping capacity and 33% of plant capacity.

According to the Northern Virginia Regional Water Supply Plan published in 2011, Middleburg is projected to maintain a water surplus of approximately 0.21 MGD until 2040. This plan should be verified through water production and use records, and monitored annually. The following table provides easy to use calculations.

The following information is needed to calculate the above percentages:

- A. Average production = _____ gallons per day
- B. Pumping capacity = _____ gallons per day (% of pumping capacity is A/B)
- C. Plant capacity = _____ gallons per day (% of plant capacity is A/C)

Drinking Water Shortage – Spill Response Sheet

TOWN OF MIDDLEBURG
PWSID 6107450

Procedures should be in place for the kinds of catastrophic spills that can reasonably be expected in the SWPA. The chain-of-command, notification procedures and response actions should be known by all water system employees.

What fire department or hazardous materials response team would respond to a spill in the SWPA?

Middleburg Volunteer Fire Department

The fire department or hazardous materials response team can be reached at:

Emergency Phone #	Alternate Day-Time Phone #	Alternate After Hours Phone #
911	NA	NA

Responsibility for coordinating the response procedures will rest upon a key water system staff. This person will oversee and coordinate activities with other water system staff and external organizations.

	Name	Day-Time Phone #	After Hours Phone #
Primary Contact	Martha Mason Semmes, Town Administrator	(540) 687-5152	(571) 209-0523
Backup Contacts	Loudoun Water	(703) 507-6639	(571) 291-7878

Notify Virginia Department of Health Culpepper Field Office

Hugh J. Eggborn, PE, Field Director
400 South Main Street - 2nd Floor
Culpeper, VA 22701-3318
Phone: (540) 829-7340
Fax: (540) 829-7337
Email: Hugh.Eggborn@vdh.virginia.gov

General Emergency Response Procedure

TOWN OF MIDDLEBURG PWSID 6107450

When an incident occurs the water system will follow the procedures in their Emergency Response Plan. However, if an Emergency Response Plan is not accessible, the following response procedure is recommended:

- ❖ Received and document incident information, including:
 - What is the incident? (ex. material spill, contaminant detection in water, power outage, security breach, line break.)
 - Where has incident occurred? Is the incident ongoing?
 - What components of the water system are affected?
- ❖ Identify how the water system came to know about incident:
 - Outside source: individual or public notice by an official
 - Emergency reported to 911 or other emergency response notification
 - An employee detected contamination by testing or observation
- ❖ Begin to notify the proper chain of command:
 - Chief Plant Operator
 - Other System/City Staff
 - Emergency Responders
 - Virginia Department of Health Field Office
- ❖ Identify if the water system is in imminent danger; if so begin to shut down the treatment process accordingly. Answer these questions:
 - How long can water be supplied from storage?
 - How wide spread is the incident?
 - Does the treatment plant need to be completely evacuated?
 - What is the impact to the treatment plant and potentially to the customers?
 - Does any specific area of the distribution system need to be isolated?
 - Obtain additional personnel to assist in treatment plant operation, maintenance, monitoring, or shut down as appropriate
 - Call for materials and equipment as necessary
- ❖ Provide information to emergency agencies, the public, and issue press releases

- Who is the point of contact to distribute information to the public and coordinate with these agencies?
 - County Emergency Operations Center
 - Local Police, Fire, and Emergency Medical Services
 - Virginia Department of Environmental Quality
 - Virginia State Police
 - County Sheriff
 - Virginia WARN
 - Virginia Rural Water Association
 - How often will updates be provided?
 - Has the incident been addressed with no further action needed?
- ❖ Depending on the circumstances, other measures may include:
- Backup Plan:
 - Utilize backup generator.
 - Switch to a backup source of water.
 - Contact certified well driller and/or pump installer to address issues with well.
 - Contact water system engineer.
 - Contact alternate source water suppliers, such as neighboring water system, water haulers, bottled water distributors.
 - Release affected waters from, plant, storage, or reservoir.
 - Resume pumping according to level of contamination or toxins:
 - Utilize environmental testing labs to analyze water.
 - Utilize the chemical suppliers for potential solutions and remedies.
 - Address Clean up:
 - Coordinate with State/County/Local/Private partners via ongoing meetings and other communications, support or assistance.
 - Organize support accordingly.
 - Utilize the County Emergency Services, WVDEP, and other local emergency response resources as necessary.
 - Partner with WVWARN and WV Rural Water Emergency Team, networks of utilities that can be called on to assist in an emergency situation.
- ❖ Financing of clean-up would be according to magnitude of incident.
- Initial management and in house work would be handled as part of regular maintenance cost.
 - Temporary financing would be available until the liable party could be ascertained.
- ❖ Document the incident and actions taken. Retain records.